



DVD-VCR COMBINATION

Chassis : Zeus EUROPE

DVD-V5450/XEF, XEB, XEU, XEN, XEC,
XEE, XEG, COM, EUR, XEH,
XEO

DVD-V5350/XET

DVD-V5500/XEH

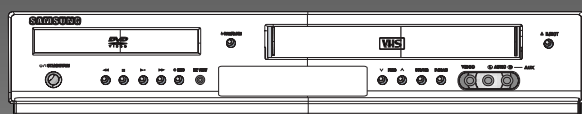
DVD-V6400/XEF, XEB, XEU, XEN, XEC,
XEE, XEG, COM, EUR, XEH,
XEO,

DVD-V6450/XET

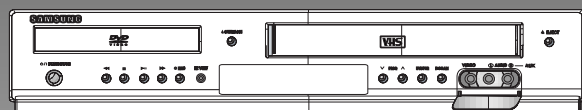
DVD-V6500/XEH

SERVICE Manual

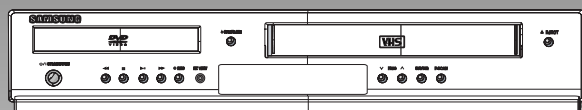
DVD-VCR COMBINATION



DVD-V5500



DVD-V6500



DVD-V5450/V5350/V6400/V6450

Merit & Character regarding Product

- ① 82mm Slim, Design
- ② MP3,VCD Playdack
- ③ Divx Playback Support (Model Option)
- ④ Progressive Video out
- ⑤ 6Head Hi-Fi VCR
- ⑥ WHA Playback Support



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1. Precautions

1-1 Safety Precautions

1) Before returning an instrument to the customer, always make a safety check of the entire instrument, including, but not limited to, the following items:

(1) Be sure that no built-in protective devices are defective or have been defeated during servicing. (1) Protective shields are provided to protect both the technician and the customer. Correctly replace all missing protective shields, including any removed for servicing convenience.

(2) When reinstalling the chassis and/or other assembly in the cabinet, be sure to put back in place all protective devices, including, but not limited to, nonmetallic control knobs, insulating fish papers, adjustment and compartment covers/shields, and isolation resistor/capacitor networks. Do not operate this instrument or permit it to be operated without all protective devices correctly installed and functioning.

(2) Be sure that there are no cabinet openings through which adults or children might be able to insert their fingers and contact a hazardous voltage. Such openings include, but are not limited to, excessively wide cabinet ventilation slots, and an improperly fitted and/or incorrectly secured cabinet back cover.

(3) Leakage Current Hot Check-With the instrument completely reassembled, plug the AC line cord directly into a 120V AC outlet. (Do not use an isolation transformer during this test.) Use a leakage current tester or a metering system that complies with American National Standards Institute (ANSI) C101.1 Leakage Current for Appliances and Underwriters Laboratories (UL) 1270 (40.7). With the instrument's AC switch first in the ON position and then in the OFF position, measure from a known earth ground (metal water pipe, conduit, etc.) to all exposed metal parts of the instrument (antennas, handle brackets, metal cabinets, screw-heads, metallic overlays, control shafts, etc.), especially any exposed metal parts that offer an electrical return path to the chassis.

Any current measured must not exceed 0.5mA. Reverse the instrument power cord plug in the outlet and repeat the test. See Fig. 1-1.

Any measurements not within the limits specified herein indicate a potential shock hazard that must be eliminated before returning the instrument to the customer.

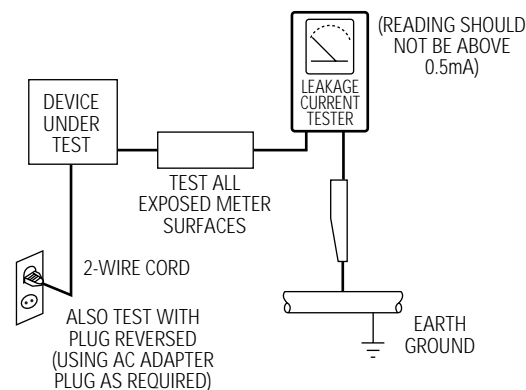


Fig. 1-1 AC Leakage Test

(4) Insulation Resistance Test Cold Check-(1) Unplug the power supply cord and connect a jumper wire between the two prongs of the plug. (2) Turn on the power switch of the instrument. (3) Measure the resistance with an ohmmeter between the jumpered AC plug and all exposed metallic cabinet parts on the instrument, such as screwheads, antenna, control shafts, handle brackets, etc. When an exposed metallic part has a return path to the chassis, the reading should be between 1 and 5.2 megohm. When there is no return path to the chassis, the reading must be infinite. If the reading is not within the limits specified, there is the possibility of a shock hazard, and the instrument must be repaired and rechecked before it is returned to the customer. See Fig. 1-2.

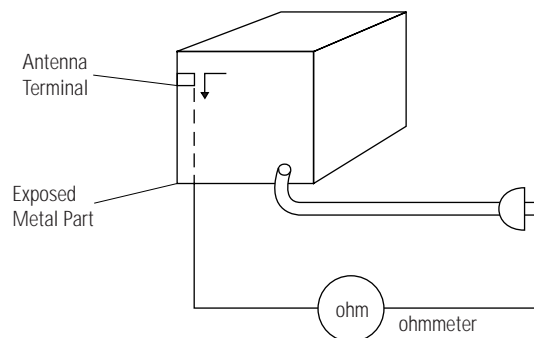




Fig. 1-2 Insulation Resistance Test

- 2) Read and comply with all caution and safety related notes on or inside the cabinet, or on the chassis.
- 3) Design Alteration Warning-Do not alter or add to the mechanical or electrical design of this instrument. Design alterations and additions, including but not limited to, circuit modifications and the addition of items such as auxiliary audio output connections, might alter the safety characteristics of this instrument and create a hazard to the user. Any design alterations or additions will make you, the servicer, responsible for personal injury or property damage resulting therefrom.
- 4) Observe original lead dress. Take extra care to assure correct lead dress in the following areas:
(1) near sharp edges, (2) near thermally hot parts (be sure that leads and components do not touch thermally hot parts), (3) the AC supply, (4) high voltage, and (5) antenna wiring. Always inspect in all areas for pinched, out-of-place, or frayed wiring. Do not change spacing between a component and the printed-circuit board. Check the AC power cord for damage.
- 5) Components, parts, and/or wiring that appear to have overheated or that are otherwise damaged should be replaced with components, parts and/or wiring that meet original specifications.
Additionally, determine the cause of overheating and/or damage and, if necessary, take corrective action to remove any potential safety hazard.
- 6) Product Safety Notice-Some electrical and mechanical parts have special safety-related characteristics which are often not evident from visual inspection, nor can the protection they give necessarily be obtained by replacing them with components rated for higher voltage, wattage, etc. Parts that have special safety characteristics are identified by shading, an () or a () on schematics and parts lists. Use of a substitute replacement that does not have the same safety characteristics as the recommended replacement part might create shock, fire and/or other hazards. Product safety is under review continuously and new instructions are issued whenever appropriate.

1-2 Servicing Precautions



CAUTION : Before servicing units covered by this service manual and its supplements, read and follow the Safety Precautions section of this manual.

Note : If unforeseen circumstances create conflict between the following servicing precautions and any of the safety precautions, always follow the safety precautions. Remember: Safety First.

1-2-1 General Servicing Precautions

- (1) a. Always unplug the instrument's AC power cord from the AC power source before (1) re-moving or reinstalling any component, circuit board, module or any other instrument assembly, (2) disconnecting any instrument electrical plug or other electrical connection, (3) connecting a test substitute in parallel with an electrolytic capacitor in the instrument.
- b. Do not defeat any plug/socket B+ voltage interlocks with which instruments covered by this service manual might be equipped.
- c. Do not apply AC power to this instrument and /or any of its electrical assemblies unless all solid-state device heat sinks are correctly installed.
- d. Always connect a test instrument's ground lead to the instrument chassis ground before connecting the test instrument positive lead. Always remove the test instrument ground lead last.

Note : Refer to the Safety Precautions section ground lead last.

- (2) The service precautions are indicated or printed on the cabinet, chassis or components. When servicing, follow the printed or indicated service precautions and service materials.
- (3) The components used in the unit have a specified flame resistance and dielectric strength. When replacing components, use components which have the same ratings. Components identified by shading, by () or by () in the circuit diagram are important for safety or for the characteristics of the unit. Always replace them with the exact replacement components.

- (4) An insulation tube or tape is sometimes used and some components are raised above the printed wiring board for safety. The internal wiring is sometimes clamped to prevent contact with heating components. Install such elements as they were.

- (5) After servicing, always check that the removed screws, components, and wiring have been installed correctly and that the portion around the serviced part has not been damaged and so on. Further, check the insulation between the blades of the attachment plug and accessible conductive parts.

1-2-2 Insulation Checking Procedure

Disconnect the attachment plug from the AC outlet and turn the power ON. Connect the insulation resistance meter (500V) to the blades of the attachment plug. The insulation resistance between each blade of the attachment plug and accessible conductive parts (see note) should be more than 1 Megohm.

Note : Accessible conductive parts include metal panels, input terminals, earphone jacks, etc.

1-3 ESD Precautions

Electrostatically Sensitive Devices (ESD)

Some semiconductor (solid state) devices can be damaged easily by static electricity.

Such components commonly are called Electrostatically Sensitive Devices(ESD). Examples of typical ESD devices are integrated circuits and some field-effect transistors and semiconductor chip components. The following techniques should be used to help reduce the incidence of component damage caused by static electricity.

- (1) Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed for potential shock reasons prior to applying power to the unit under test.
- (2) After removing an electrical assembly equipped with ESD devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
- (3) Use only a grounded-tip soldering iron to solder or unsolder ESD devices.
- (4) Use only an anti-static solder removal devices. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ESD devices.
- (5) Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ESD devices.
- (6) Do not remove a replacement ESD device from its protective package until immediately before your are ready to install it.(Most replacement ESD devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive materials).

- (7) Immediately before removing the protective materials from the leads of a replacement ESD device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

CAUTION : Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

- (8) Minimize bodily motions when handling unpackaged replacement ESD devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ESD device).

1-4 Handling the optical pick-up

The laser diode in the optical pick up may suffer electrostatic breakdown because of potential static electricity from clothing and your body.

The following method is recommended.

- (1) Place a conductive sheet on the work bench (The black sheet used for wrapping repair parts.)
 - (2) Place the set on the conductive sheet so that the chassis is grounded to the sheet.
 - (3) Place your hands on the conductive sheet (This gives them the same ground as the sheet.)
 - (4) Remove the optical pick up block
 - (5) Perform work on top of the conductive sheet. Be careful not to let your clothes or any other static sources to touch the unit.
- ◆ Be sure to put on a wrist strap grounded to the sheet.
 - ◆ Be sure to lay a conductive sheet made of copper etc. Which is grounded to the table.

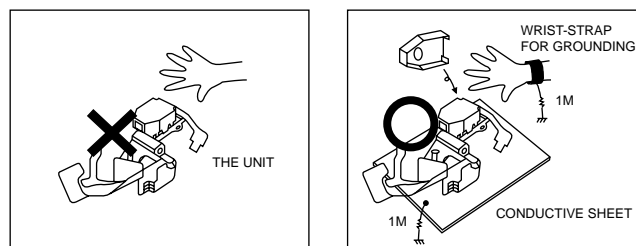


Fig.1-3

- (6) Short the short terminal on the PCB, which is inside the Pick-Up ASS'Y, before replacing the Pick-Up. (The short terminal is shorted when the Pick-Up Ass'y is being lifted or moved.)
- (7) After replacing the Pick-up, open the short terminal on the PCB.

1-5 Pick-up disassembly and reassembly

1-5-1 Disassembly

- 1) Remove the power cord.
- 2) Disassemble the Deck-Assy.
- 3) Make solder land 2 points short on Pick-up.
(See Fig. 1-4)
- 4) Disassemble the Pick-up.

1-5-2 Assembly

- 1) Replace the Pick-up.
- 2) Remove the soldering 2 points on Pick-up.
- 3) Reassemble the Deck-Assy.

Note : If the assembly and disassembly are not done in correct sequence, the Pick-up may be damaged.

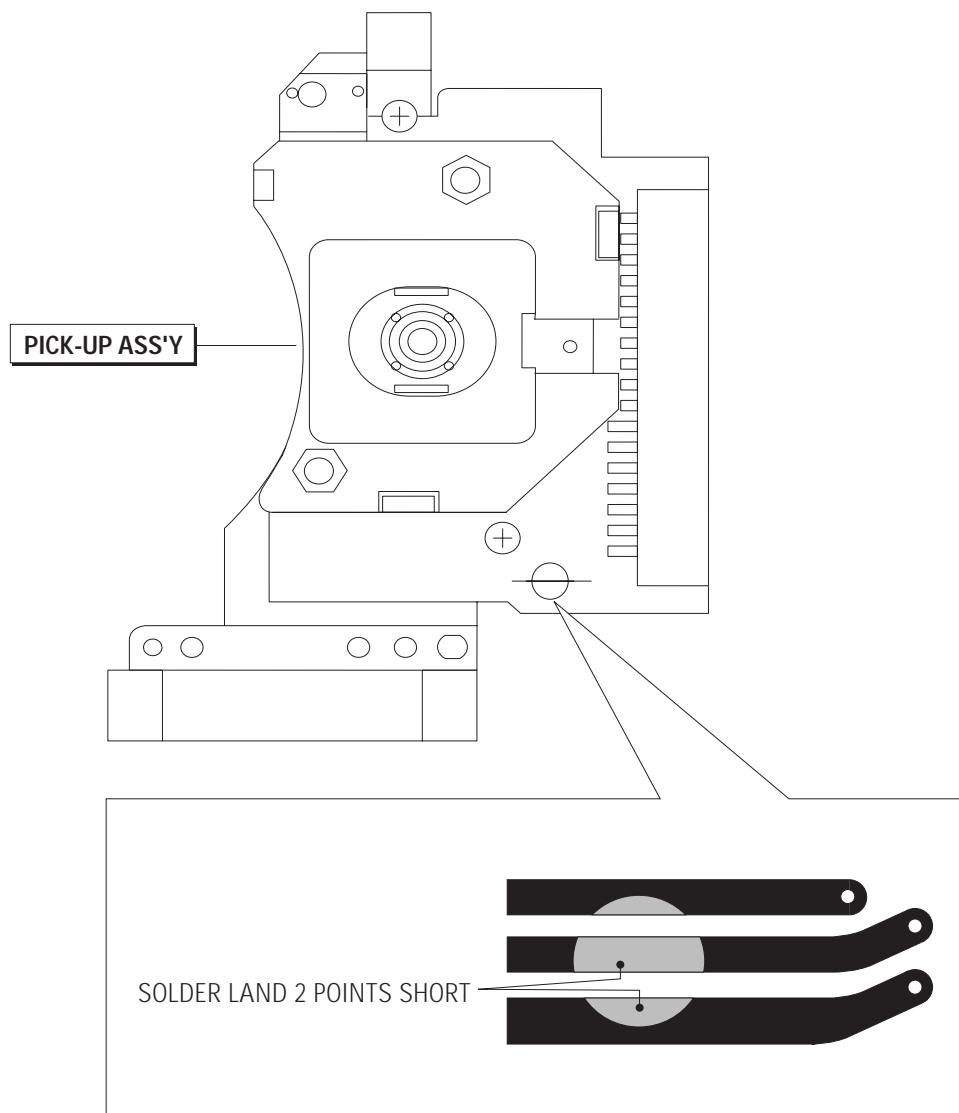


Fig. 1-4

14. VCR Deck Operating Description

14-1 Features of Mechanism

The following items describe features of the mechanism in VCR.

- (1) This VCR uses 3-motor system consisted of a cylinder motor, capstan motor, and loading motor.
A capstan motor is used to drive the reel and the driving force is transmitted through the belt capstan.
The cassette loading, tape loading, and mode shift operation are performed by the loading motor.
- (2) The time duration from cassette-in to picture appearance is shortened by employing the loading drive mechanism (automatic transferring operation from the cassette loading to the tape loading by rotating the loading motor continuously), and by increasing the speed of the tape loading, etc
- (3) Employment of the full loading system shortens time required to shift the mode such as STOP to PLAY-BACK picture display.
- (4) To simplify wiring and others, the electrical components relating to operation of the mechanical deck, such as sensors, mode switch, servo microcomputer, etc. are mounted on the PCB arranged all over the bottom side of the mechanical deck.

14-2 Basic Configuration of Mechanism

As shown in Fig. 14-1, the mechanism of VCR is configured with five main blocks, and each operation is precisely controlled by the microcomputer built in the system control section.

First, load a video cassette tape in VCR :

- (1) The cassette is automatically set on the reel disc.
- (2) The tape is pulled out from the cassette, and wrapped around the cylinder.
- (3) The cylinder turns in a constant speed rate synchronizing with the vertical Sync. signal of video signal.
- (4) The tape runs in synchronization with cylinder rotation and traces the video tracks precisely.
- (5) The running tape is taken up by the reel, the tape feeding side is given with a proper tension so that tape is not slacked.

The above series of operations are performed under control of the system control section. The system control section also sends commands to each mechanism according to the operation buttons, thus the VCR is designed so that various operations such as recording, playback, special playback, FPS/RPS, and FF/REW, etc. are correctly performed.

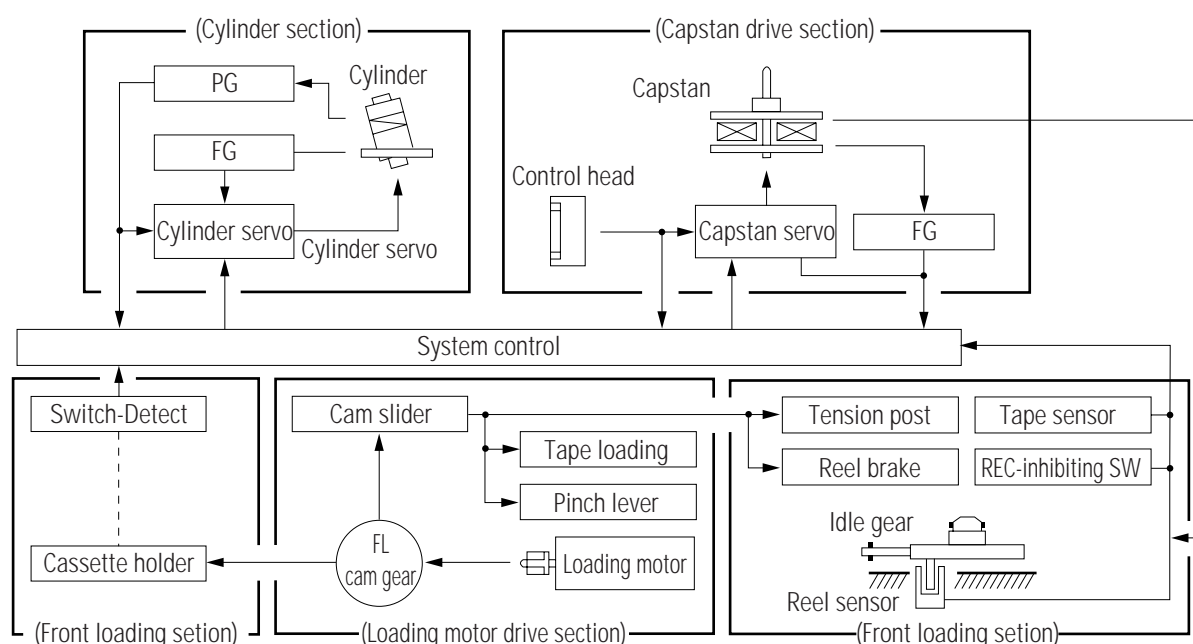


Fig. 14-1 Basic Configuration of Mechanism

14-3 Main Mechanism and Functions

14-3-1 Tape Path System

The tape come out from the supply reel (S) of the video cassette runs through paths shown in Figs. 14-2 and 14-3, and is taken up by the take-up (T) reel. (S stands for the supply reel, and T for the take-up reel, hereafter.)

At S reel side (tape entrance side of the cylinder) against the cylinder, a tension post to allow the tape surface to contact with each head with a proper tension which assures stable running, an FE head which erases entire data of the tape, and an S guide roller which restricts tape motion in upward/downward direction are provided.

In the same way, a T guide roller, audio head to record audio signals at upper side of the tape, control head to record and reproduce a control signal at lower side of the tape, and an audio erase head to erase only the audio signals and perform after-recording in parallel with the audio head are provided at T reel side. (tape exit side of the cylinder).

The guide parts marked with asterisks (*) are equipped with the adjusting mechanism to stabilize the tape running or to record and reproduce the signals precisely.

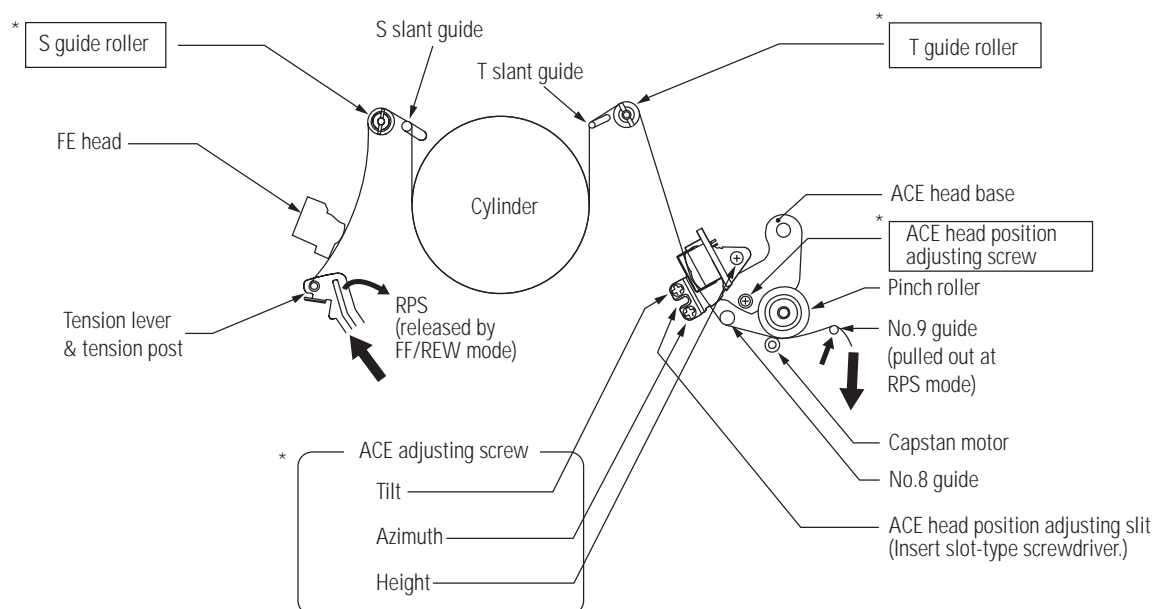


Fig. 14-2 Tape Path System

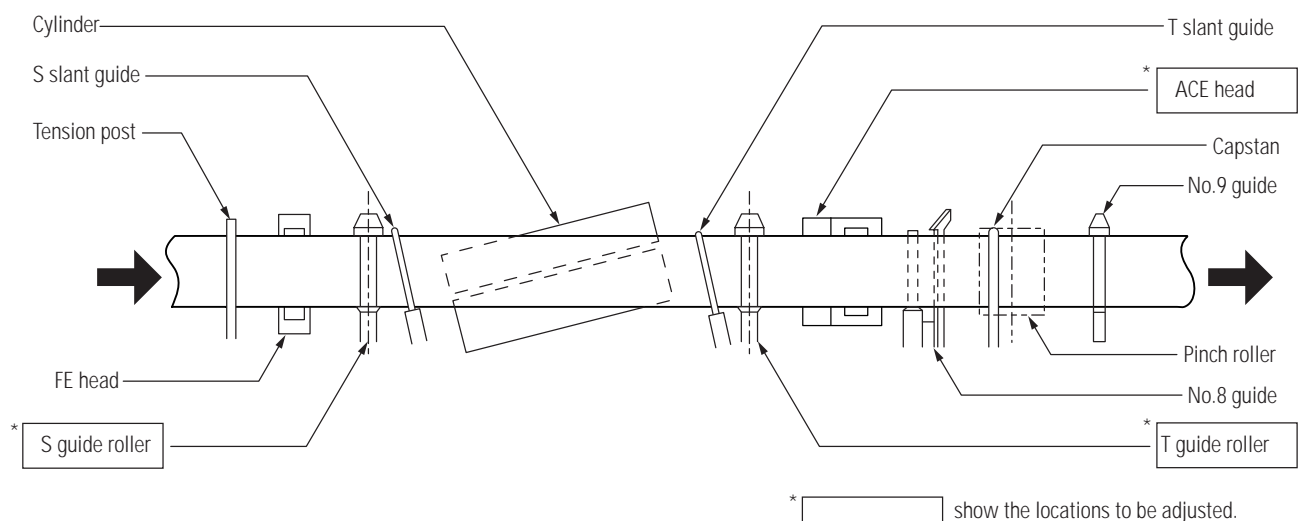


Fig. 14-3 Guide Path System

14-3-2 Reel Drive System

The reel drive system consists of a capstan motor as a drive power source, belt as a power transmission mechanism, clutch mechanism, idle gears, and a reel disc. Selecting of forward rotation or reverse rotation is carried out by an idle gear which changes its rotating direction according to rotating direction of the clutch holder.

Reel take-up torque is selected according to an operation mode.

In the record, playback, fps, rps modes, the reel take-up torque is controlled by the clutch mechanism, thereby the tape fed by the capstan is taken up with a proper torque.

In the FF and REW modes, the clutch enters a direct connecting status in which the clutch mechanism does not operate and the capstan drive torque is transmitted without reduction, so a high speed taking-up is enabled.

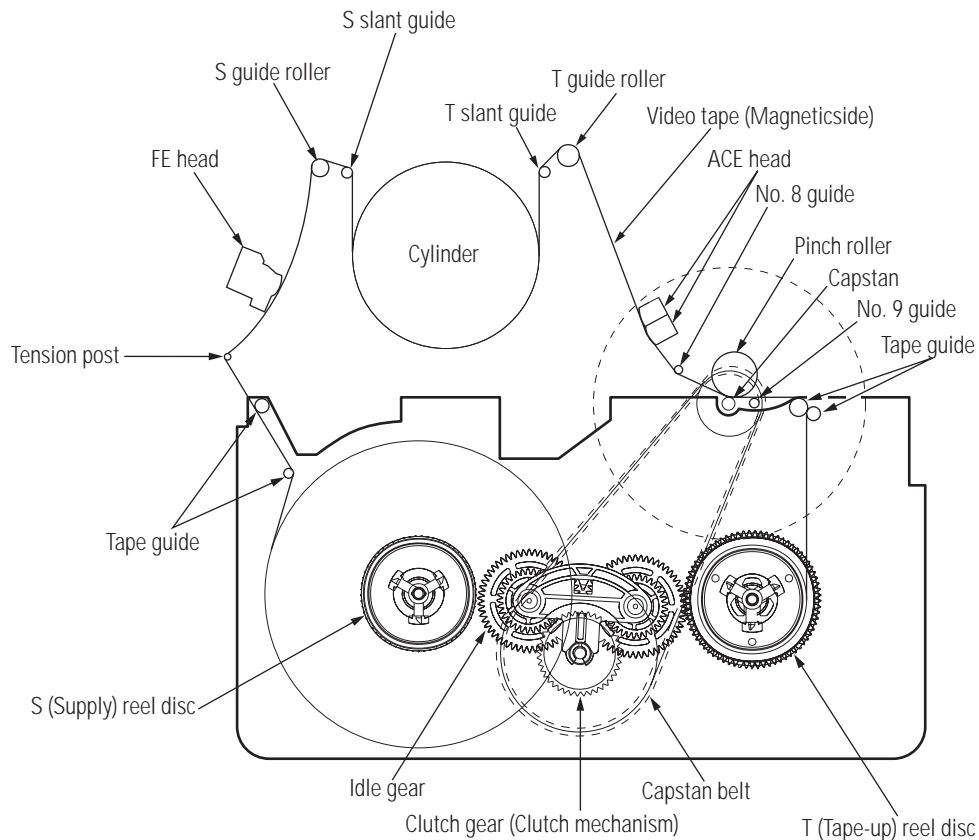


Fig. 14-4 Reel Drive System

14-4 Basis of the Mechanism

14-4-1 Front Loading

- (1) When a video cassette is inserted into the cassette holder and pushed furthermore, FL arm lever is rotated by motion of the cassette holder. The rotation of FL arm lever makes the horizontal moving of FL drive slider.
- (2) When the information of Switch Detect is transmitted to the microcomputer, the loading motor starts to rotate.
- (3) The rotation is transmitted in a sequence shown below :
Loading motor - worm gear - worm wheel - FL Cam Gear - FL Drive Slider - FL Arm Lever - Cassette Holder
- (4) The video cassette is horizontally moved.
- (5) The cassette tape is vertically moved.
In this case, the cassette lid is opened.
- (6) The cassette tape is set on the reel disc, and loading operation completes.
- (7) The cassette tape is loaded.
- (8) The status becomes full loading.
- (9) When the cassette is out, the reverse steps of the above procedure are carried out.

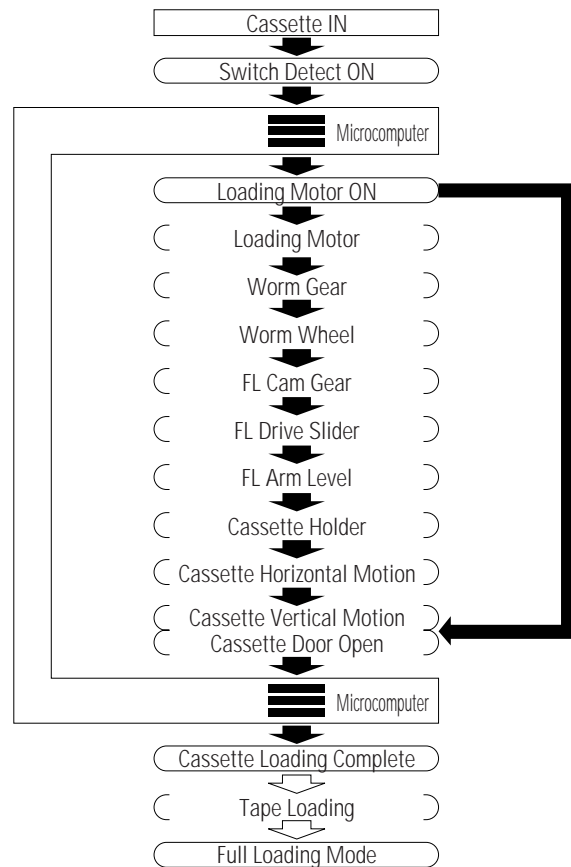


Fig. 14-5

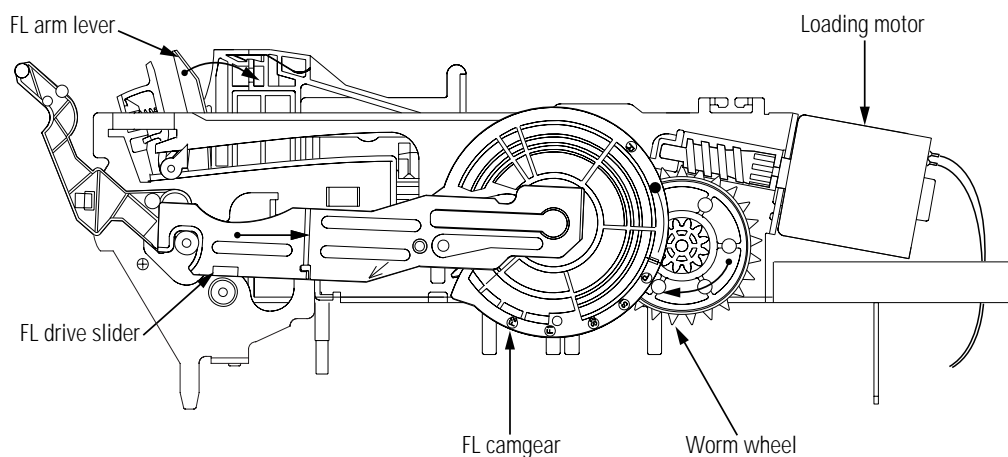


Fig. 14-6 Drive Transmission Path

14-4-2 Cassette loading/unloading Modes

When a cassette is entered in the VCR, the cassette is set on the reel disc by the front loading mechanism. In this case, the tension post, loading tape guide, capstan motor, and the No.9 guide are positioned inside of the tape in the cassette case.

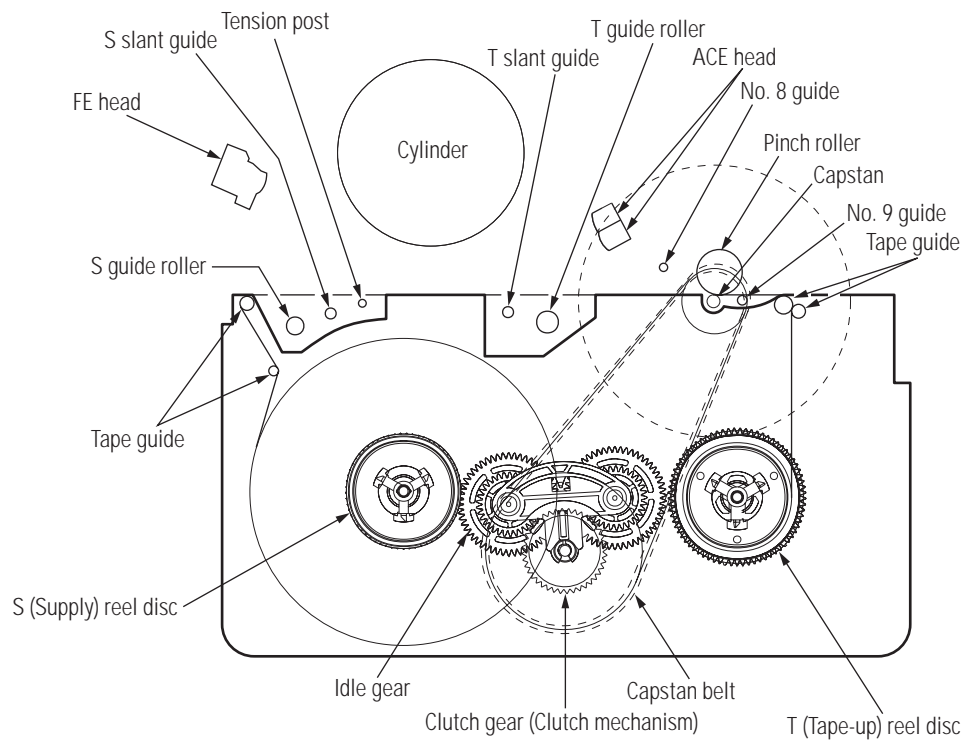


Fig. 14-7 Cassette IN/OUT Mode

14-4-3 Tape Loading

A full loading system is employed.

In the full loading system, the tape loading starts at the same time when the cassette loading operation has completed and cassette has been mounted, and the tape is pulled out, wrapped around the cylinder and the mechanism enters the stop status under this condition.

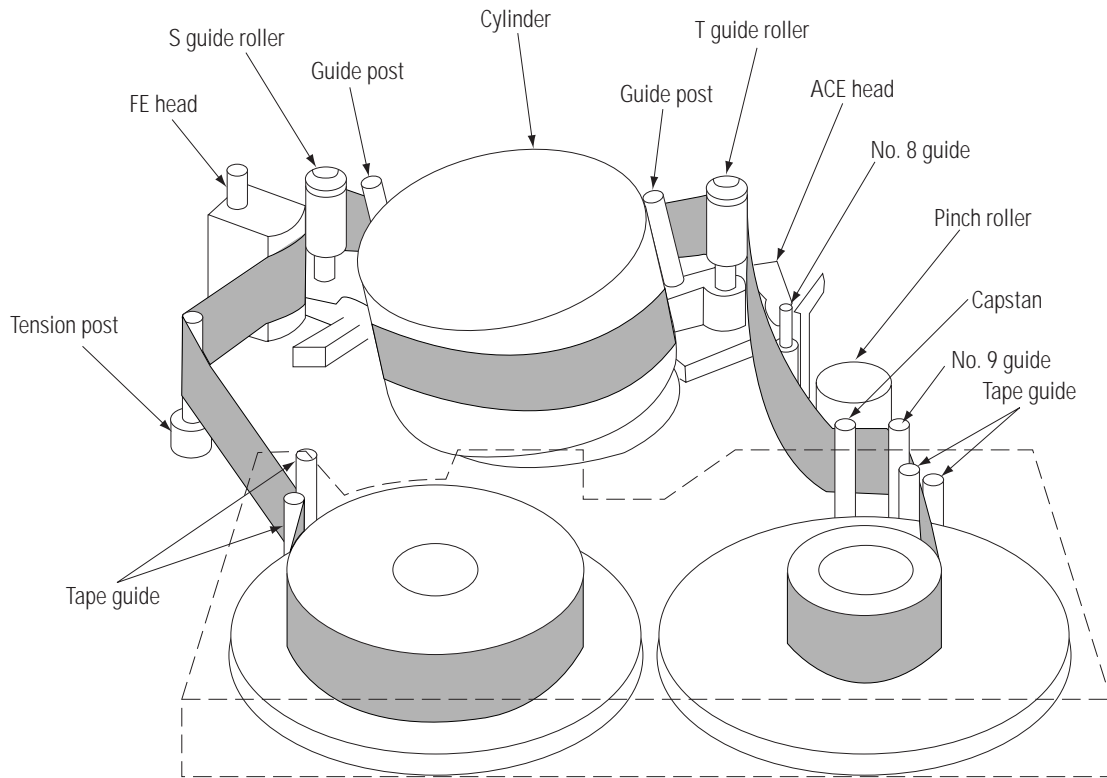


Fig. 14-8 Tape Loading

14-4-4 Playback Standby Mode

In the full loading system, the tape loading starts at the same time when the cassette mounting has completed, the mechanism shifts to the playback position, and enters the standby status with keeping tape wrapped around the cylinder.

In this case, tape tension applied to the cylinder is decreased to protect the tape and to prevent the tape from scratches.

14-4-5 FF/REW Modes

The reels enter a free status by rotating the loading motor to go to FF/REW position.

In this case, the capstan motor rotates in colck-wise direction in the REW mode. The idle gear is swung rightward or leftward according to the rotating direction of the capstan motor. As a result, the T reel rotates in the FF mode or the S reel rotates in the REW mode, thus taking up the tape to the rotating reel.

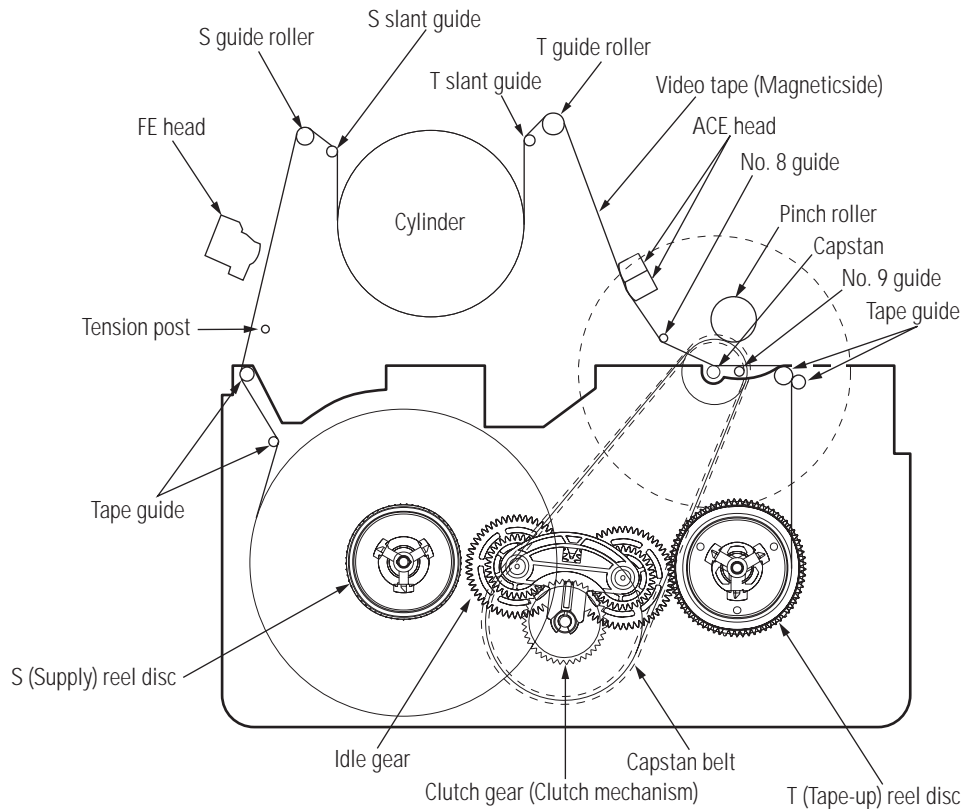


Fig. 14-9 FF/REW Mode

14-4-6 Record/Playback Modes

When the record or playback button is pressed, the tape is fed by the rotation of the capstan motor. In this case, a tension post touches the tape and braking forces created by the band brake linked with the tension post is applied to the S reel, thereby stabilizing the tape tension. The tape fed by the capstan is taken up around the T reel. The T reel is driven with a constant torque generated by transmitting rotation of the capstan motor to the clutch mechanism.

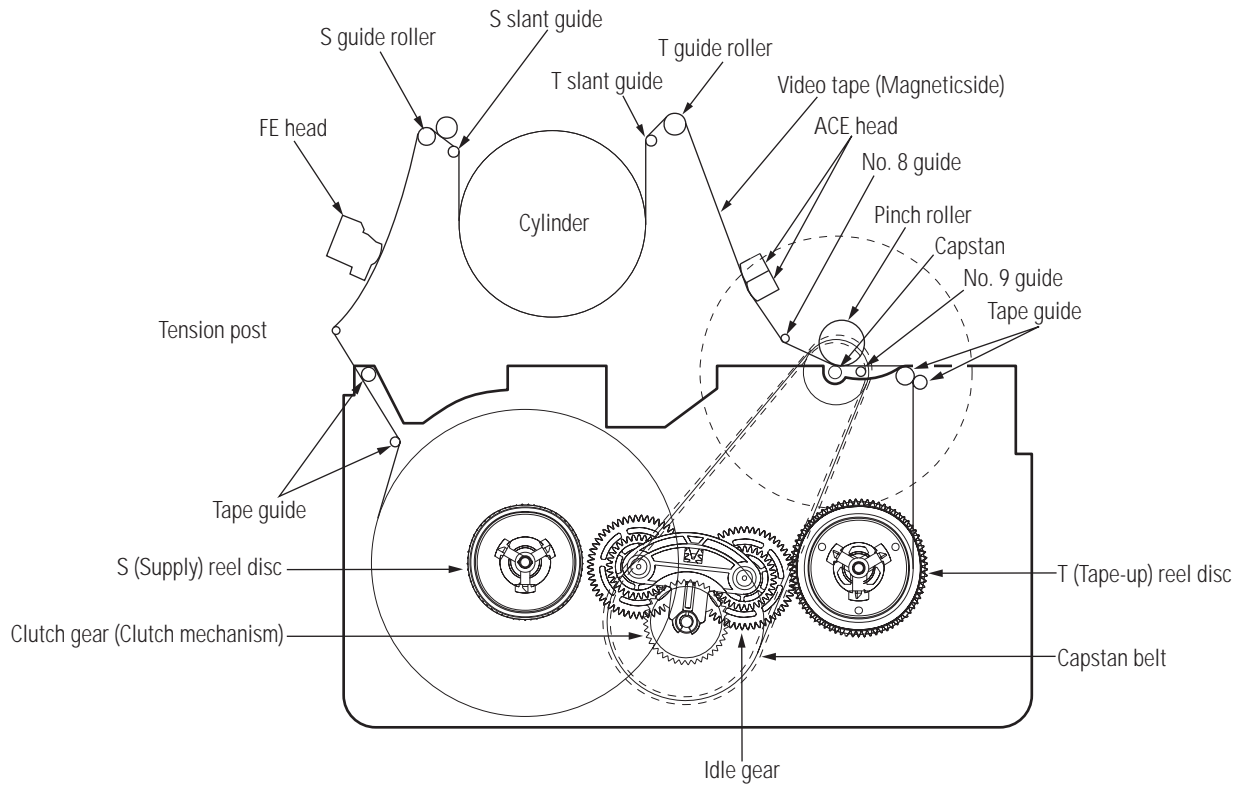


Fig. 14-10 Record/Playback Mode

14-5 System Control

In the VCR, complex mechanism, video, audio, servo circuits, etc. must be operated in specified timings matched each other. The system control circuit performs entire controls for the VCR.

An automatic stop function is also provided to protect important tape if a trouble occurs on the complex mechanism and the electrical circuits.

For this purpose, status of each part of the mechanism is always monitored with various sensor switches, and the microcomputer controls collectively the unit so that the best condition is kept.

Moreover, the microcomputer controls signal switchings for each circuit according to the mechanism status.

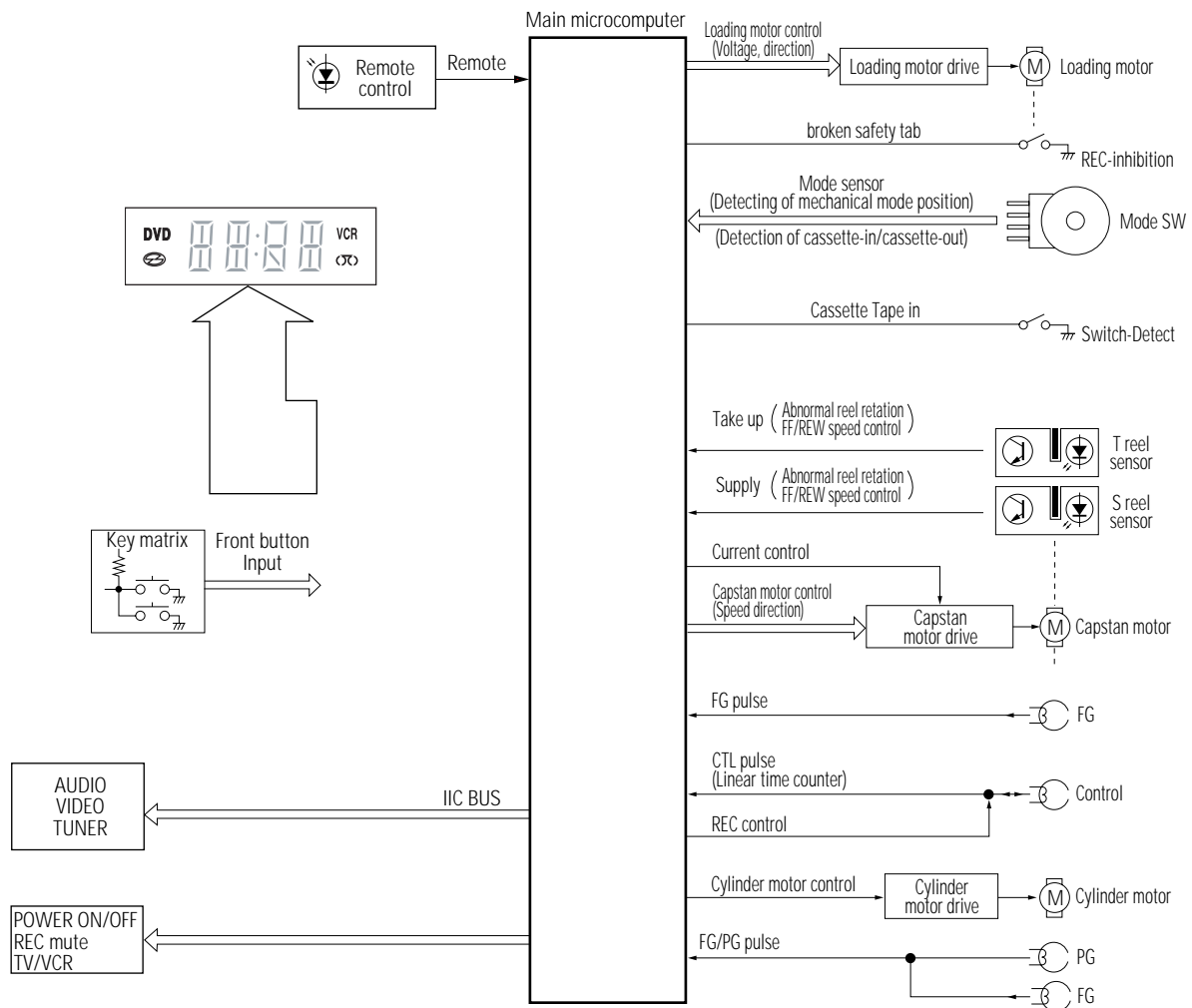


Fig. 14-11 System Control Block Diagram

14-6 System Control and Mechanical Operations

14-6-1 Mechanical Operation

The operation of mechanism is performed by rotation of the loading motor, and the transmission path of the operation is as shown in Fig. 14-12.

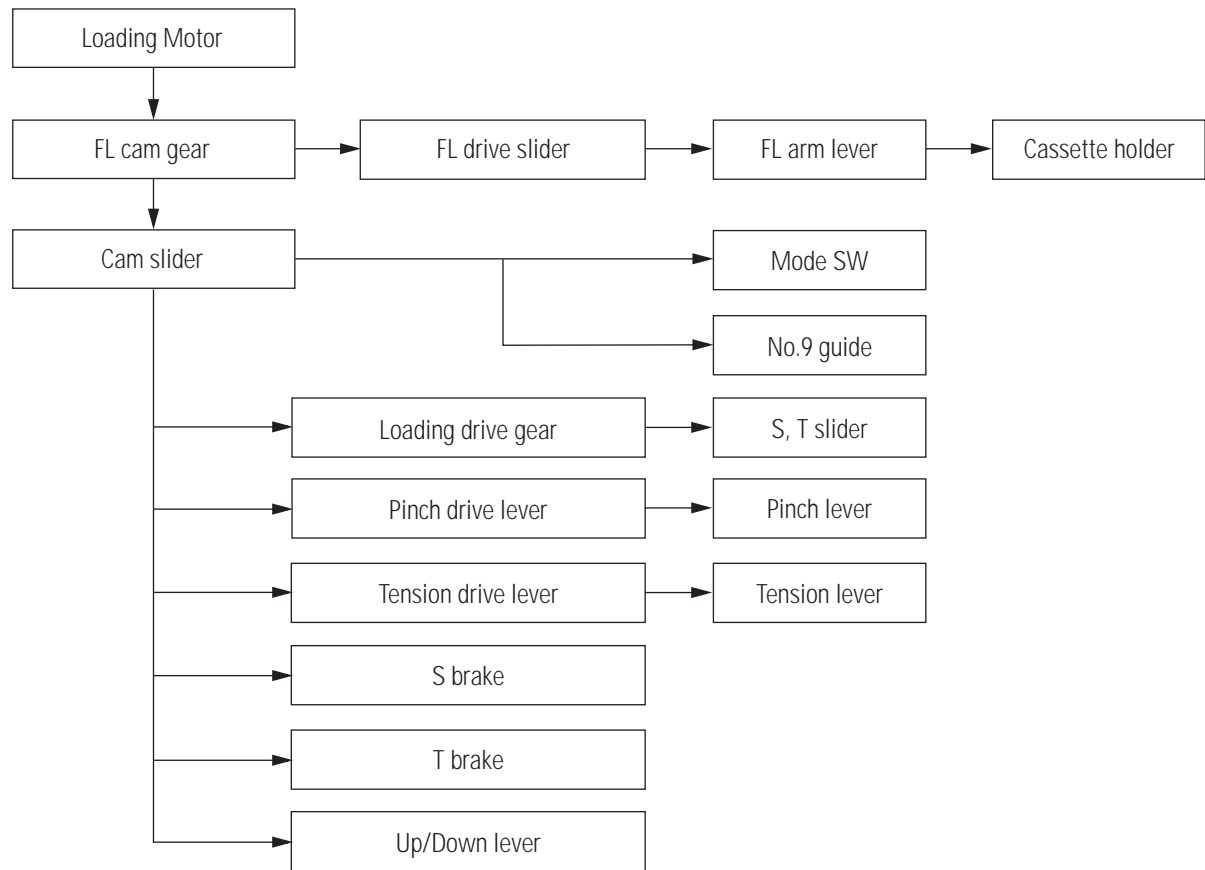


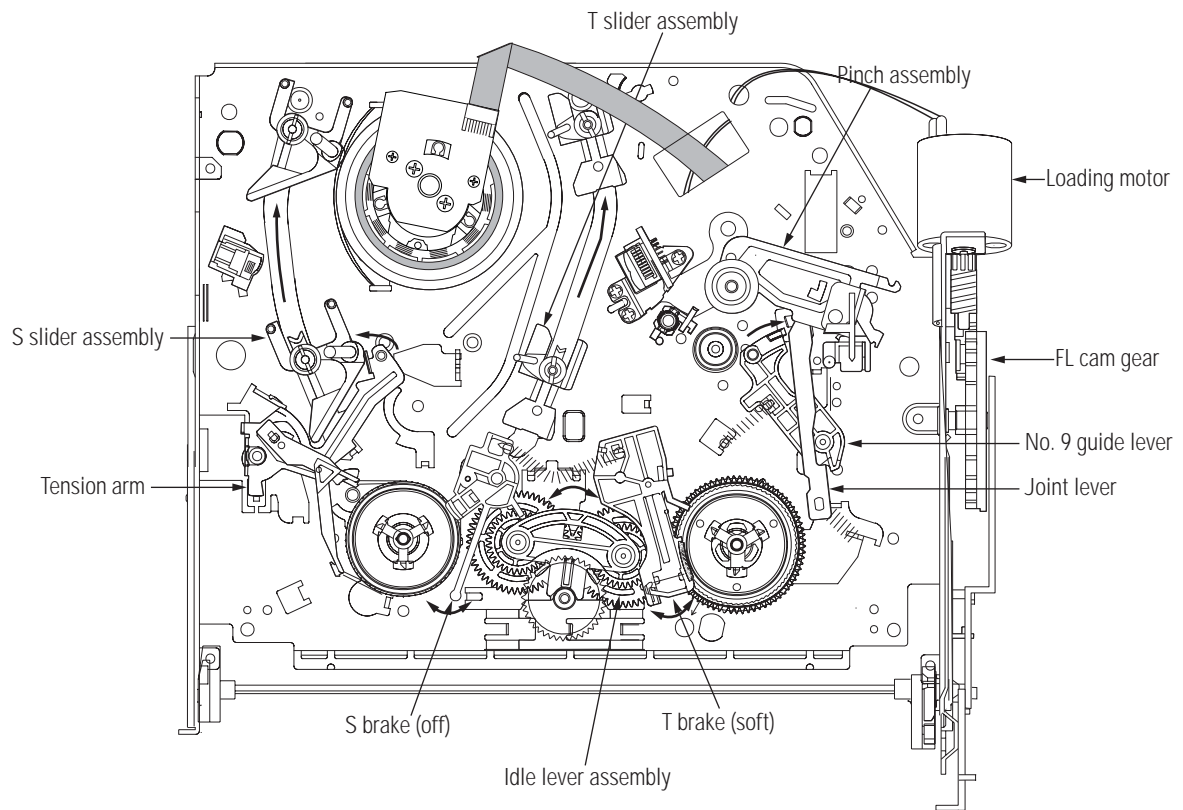
Fig. 14-12 Transmission Path of Operation

Fig. 14-14 shows each mode and mechanism status in each mode concerned with the rotation of the FL cam gear or cam slider shift. The mechanism operates as shown in Fig. 14-13 according to the timing chart in Fig. 14-14.

Note :

The Switch Detect is actuated by the rotational moving of Lever FL Arm-R and Switch on or off by insertion or ejection of a cassette.

<Top View>



<Bottom View>

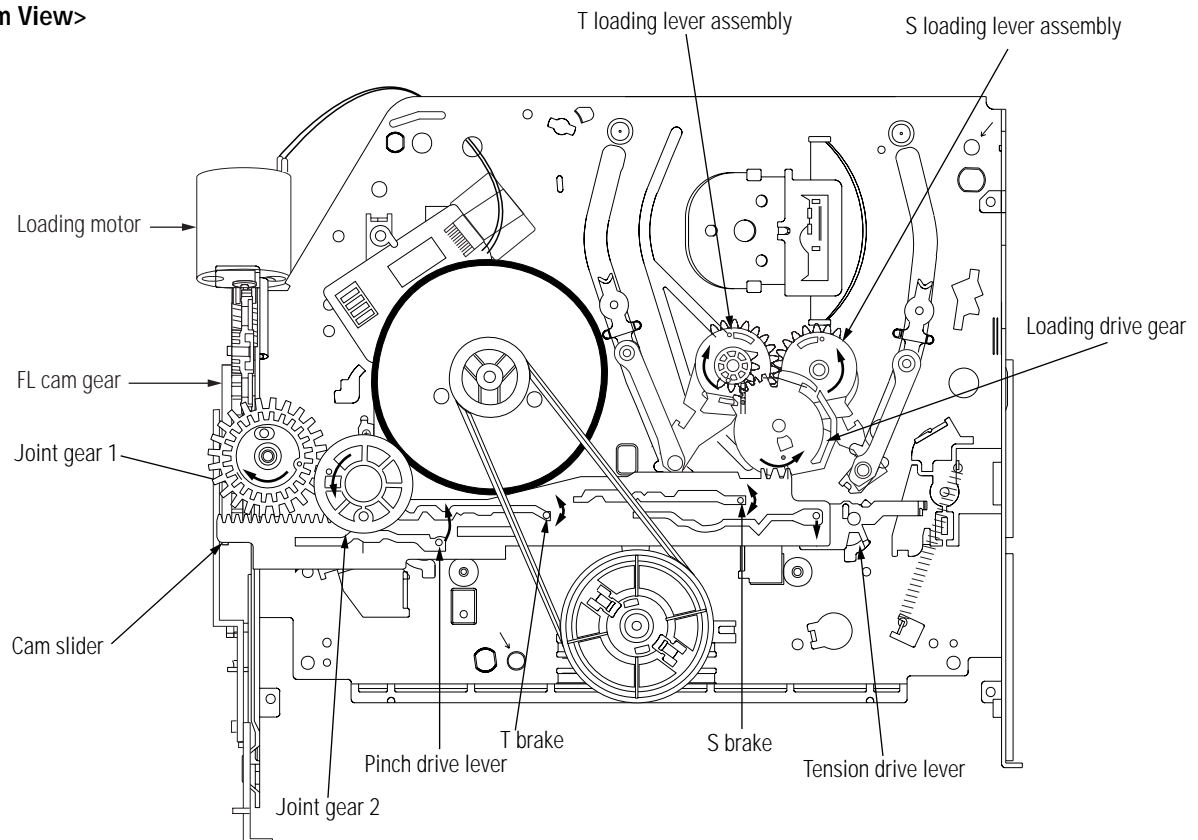


Fig. 14-13 Mechanical Operation

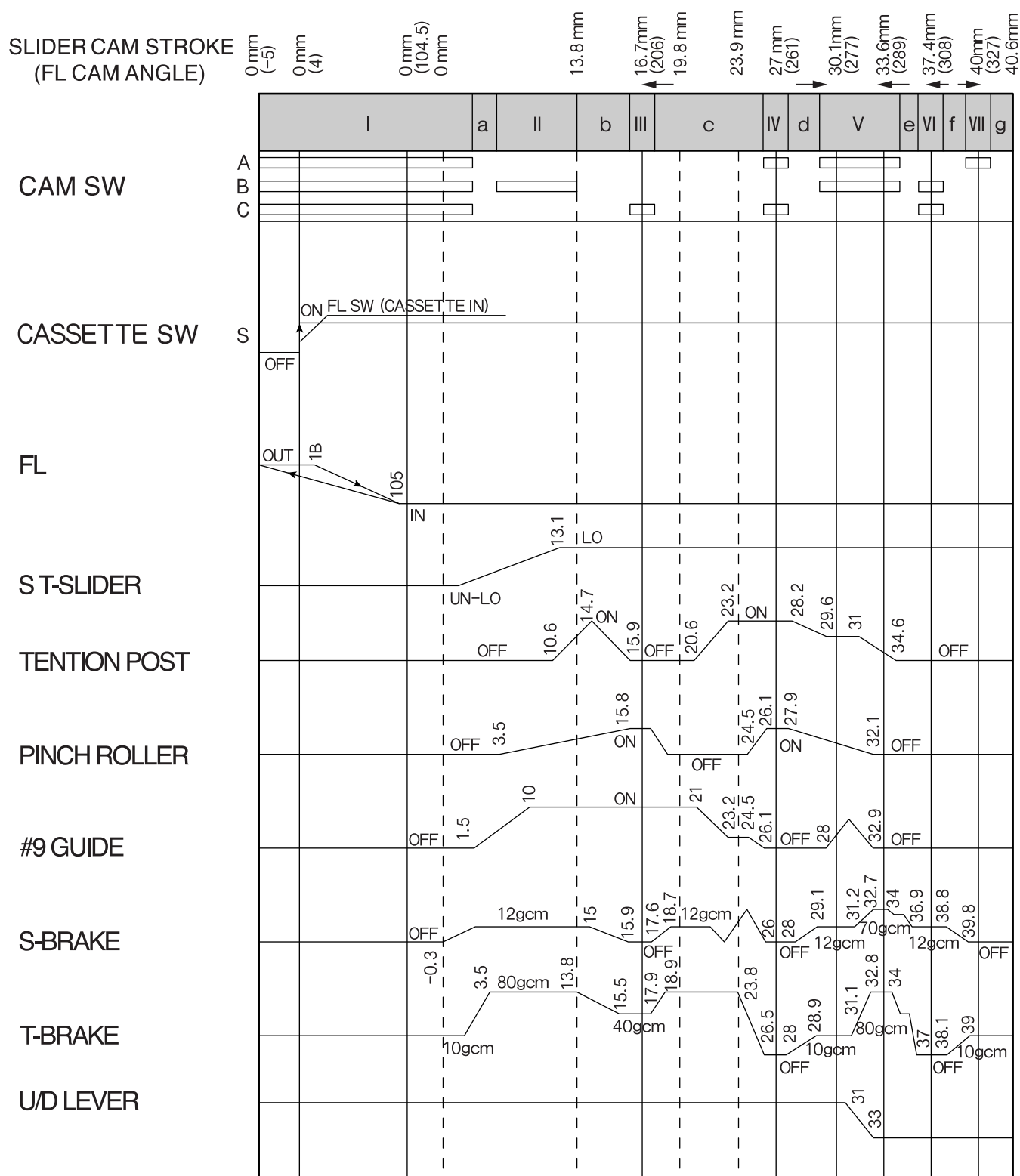


Fig. 14-14 Mecha Timing Chart (Kaiser-II)

(1) There are two STOP modes and two FF/REW modes.**1) STOP 1**

This mode is performed when PB and FF/REW is not done for 5 minute at power on.

The small load is given to S REEL DISC and T REEL DISC. And the cylinder motor is stopped.

2) STOP 2

This mode is performed when you press the stop button as performing FF/REW.

The large load is given to S REEL DISC and T REEL DISC.

3) FF/REW 1

This mode is performed when

❶ The tape load is small during performing FF and reducing speed.

❷ The tape load is large during performing REW.

The small load is given to S REEL DISK and no load is given to T REEL DISC.

4) FF/REW 2

This mode is performed when

❶ The tape load is large during performing FF.

❷ The tape load is small during performing REW and reducing speed

No load is given to S REEL DISK and the small load is given to T REEL DISK.

(Cf) According to acceleration, deceleration, and the location of tape, tension control which is caused by converting FF/REW 1 and FF/REW 2 each other is performed during FF or REW.

(2) The condition of S Brake and T Brake at each mode.**< S BRAKE >****1) OFF BRAKE (Unloading completion, RPS, PLAY, FF/REW 2)**

- S BRAKE is detached from S REEL DISC completely. So S REEL DISC is free.

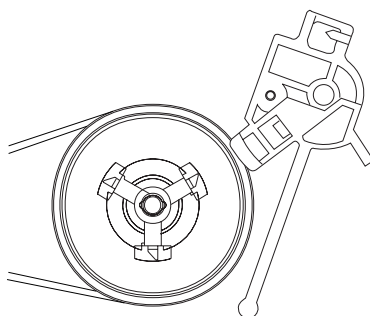


Fig. 14-15

2) SOFT BRAKE(during LOADING, STOP 1, FF/REW 1)

- The small load is given to S REEL DISC.

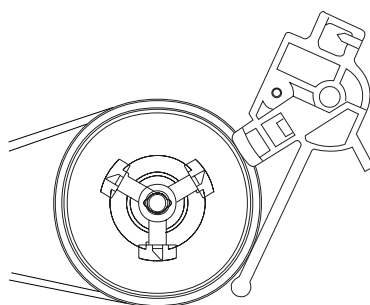


Fig. 14-16

3) MAIN BRAKE (STOP 2)

- The large load is given to S REEL DISC.

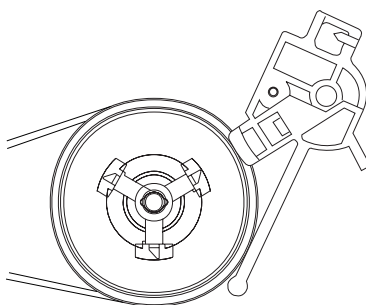


Fig. 14-17

< T BRAKE >

1) OFF BRAKE (PLAY, FF/REW 1)

- T BRAKE is detached from T REEL DISC completely. So T REEL DISC is free.

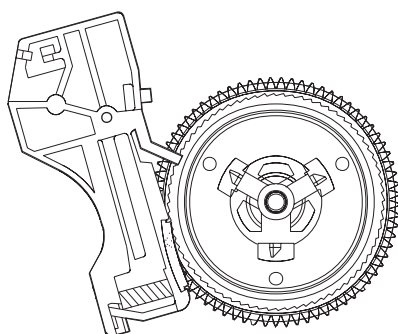


Fig. 14-18

2) SOFT BRAKE (UNLOADING Completion ,STOP 1, FF/REW 2)

- The small load is given to T REEL DISC.

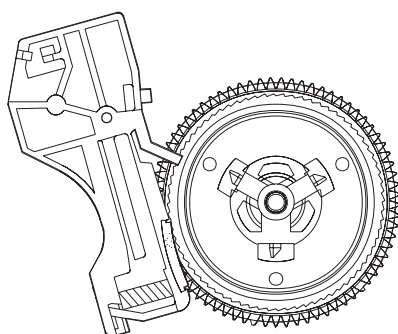


Fig. 14-19

3) REVERSE SEARCH BRAKE (RPS)

- The medium load is given to T REEL DISC.

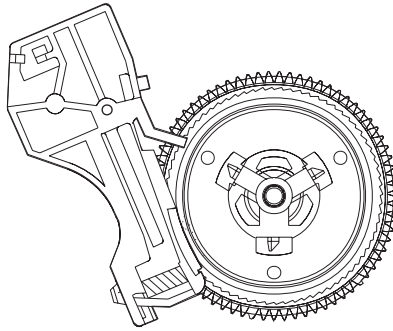


Fig. 14-20

4) MAIN BRAKE (on the loading, STOP 2)

- The large load is given to T REEL

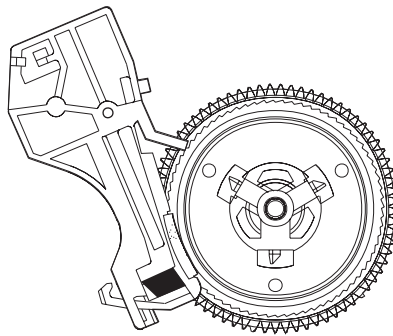


Fig. 14-21

14-6-2 Mode Sensor Drive

The mode sensor converts each mode of the mechanism into an electrical signal and transmits it to the microcomputer. The FL cam gear is rotated by the loading motor, and the cam slider slides after operation of the cassette holder.

Then the mode switch also rotates synchronized with the cam slider and outputs a signal corresponding to each mode. This signal is transmitted to the microcomputer and the microcomputer stops the cam slider at a specified angle, thus establishing each mode.

The IC601 controls Capstan Motor Drive IC for each mode to make the loading motor rotate in forward or reverse direction, thereby setting the mechanism at a specified position.

The mode switch develops three outputs A, B and C.

The circuit configuration of the mode sensor drive is shown in Fig. 14-22.

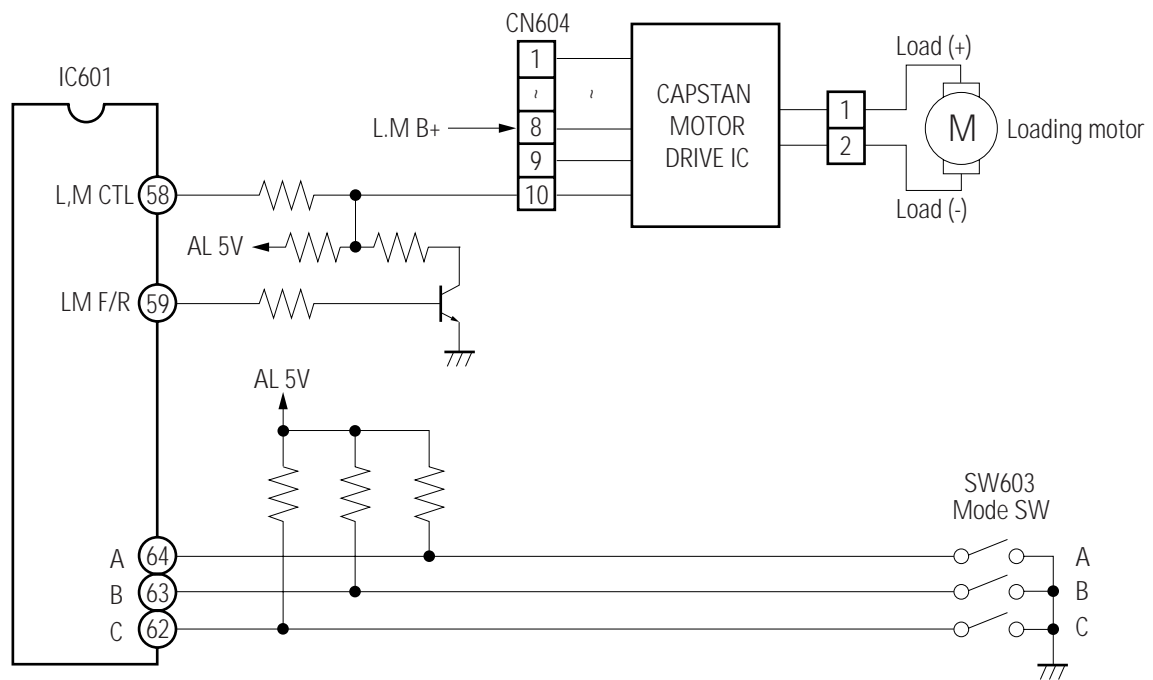


Fig. 14-22 Mode Sensor Drive

14-6-3 Operations in Each Mode

[1] Cassette loading & Tape loading mode

<Cassette loading>

- (1) The FL cam gear is in the Cassette unloading (position I) position, and the cassette holder is in the out status (Switch Detect OFF). Under this condition, each motor is stopped.
- (2) Status of the mechanism is as follows.
 - 1) S.T guide rollers, tension post, No.9 guide are in unloading status and housed in the reel disc side.
 - 2) S brake is released and T brake is in soft brake status.
 - 3) The clutch holder assembly is in clutched status and idle lever assembly is enabled to be engaged with both S and T reel discs.
- (3) When a cassette is inserted, the lock lever of cassette holder is released from the stopper, the cassette holder moves, the FL arm lever rotates, and the FL Drive Slider slides, thereby Switch Detect OF => ON.
- (4) IC601 controls Capstan Motor Drive IC to rotate the loading motor in forward direction, and move the cassette holder. At the same time, the capstan motor rotates in the reverse direction and moves the cassette down (vertical motion) while rotating the S reel disc.
- (5) The cassette lid opens when the vertical motion starts.
- (6) When the vertical motion has completed and the cassette is mounted, the capstan motor rotates in the reverse direction. At that time the position "a" is detected with the cam slider shifted and the loading/capstan motors are stopped. After 300msec the loading motor rotates in the forward direction and enters the tape loading operation.

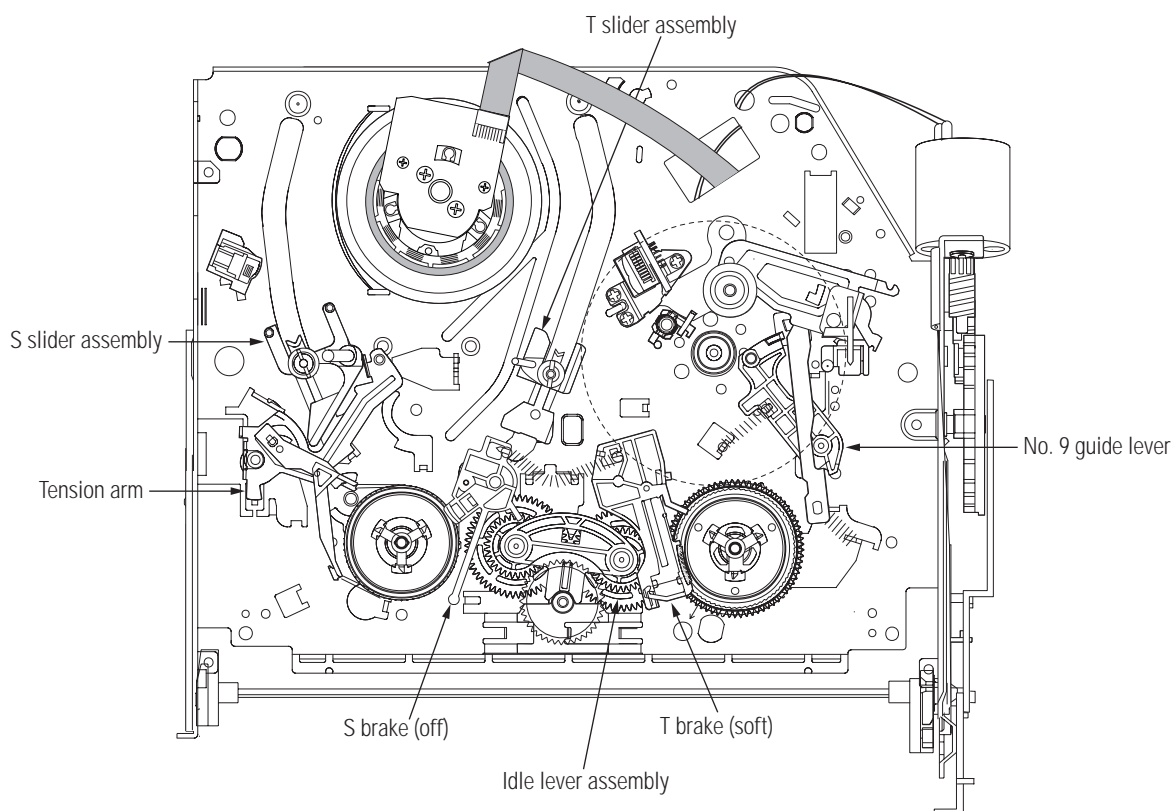


Fig. 14-23 Cassette-Loading Mode (Position I)

<Tape loading>

- (1) After slot-in operation (cassette loading), FL cam gear rotates and the cam slider starts shifting, and a loading gear is ready to start.

Under this condition, the mechanism status is as follows :

- 1) The T main brake actuates so that tape does not come out from the T reel during the loading operation.
- (2) The cylinder starts to rotate after the loading motor is rotated.
- (3) When the cam slider reaches the position II (loading/unloading modes), the mechanism enters the loading status and operates as described below.
 - 1) S,T sliders are moved through the loading drive gear and turn on the tension post.
 - 2) The No. 9 guide is loaded.
 - 3) The pinch roller is loaded up to front of the capstan.
 - 4) The head cleaner is actuated during loading operation.
 - 5) The S soft brake is actuated.
- (4) When the cam slider passes through the position III, and detects the position IV (playback standby mode), the loading motor stops. Under this condition, the mechanism status is described as below :
 - ❶ The pinch roller is pressed to the capstan.
 - ❷ The No.9 guide is stored in the cassette.
 - ❸ The tension post touches the tape, band brake force is applied, and the tension servo brake mechanism actuates.
 - ❹ Brakes for the reel discs are all off.

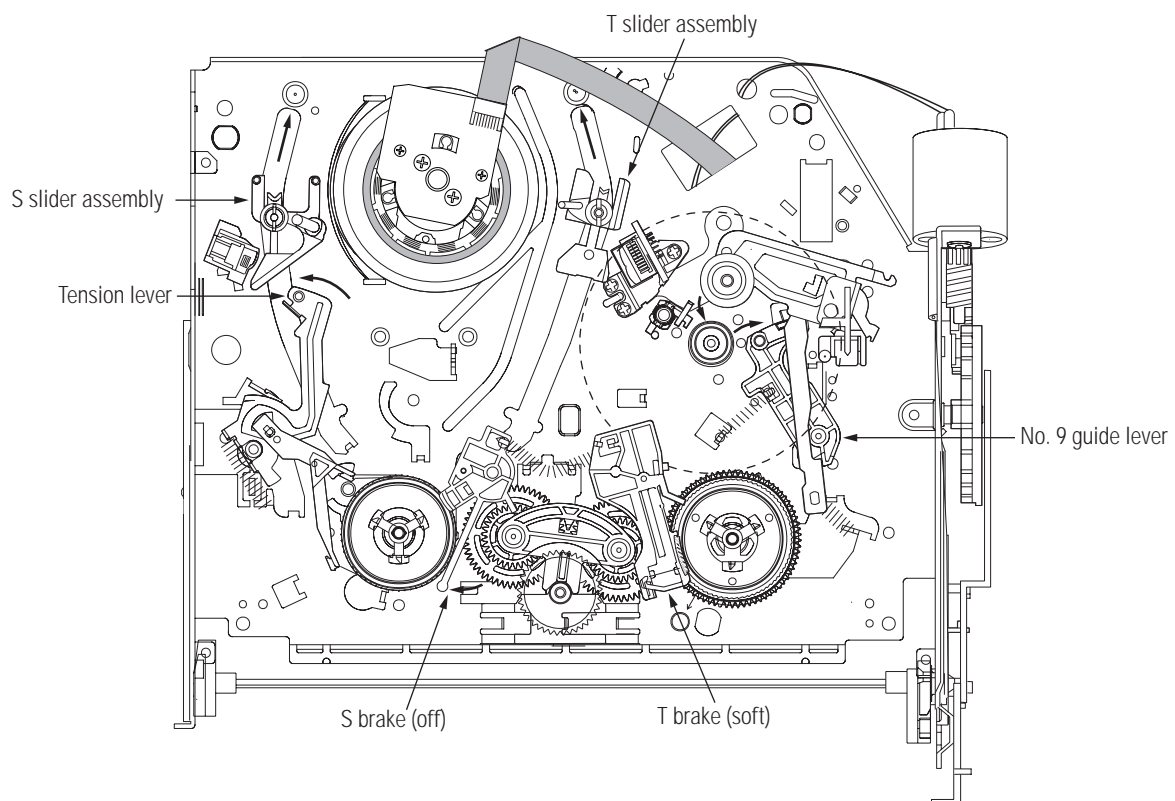


Fig. 14-24 Tape Loading Operation (Position II)

<Playback Stand-by (Stop) mode>

- (1) The tape loading operation completes and the loading motor stops.
- (2) In the same way as in the playback mode, the capstan motor rotates in forward direction and the T reel disc takes up the tape. (For more details, refer to the playback mode.)
- (3) After running the tape for 0.6s, the mechanism rotates the capstan in the reverse direction for 0.3s to slack the tape properly with pinch roller pressed.
- (4) If nothing is operated for about 5 minutes, the loading motor rotates in the forward direction and the cam position reaches the position V, and both the loading motor and the cylinder motor stop.
- (5) During this period, the video and audio systems are in the same status as in the stop mode.

[2] Tape unloading & Cassette unloading

<Tape Unloading>

- (1) When the [EJECT] button is pressed in the stop mode, the mechanism enters the eject mode.
- (2) IC601 controls cylinder motor drive IC to make the cylinder motor rotates.
- (3) IC601 makes the loading motor rotate in the reverse direction, and shifts the cam slider.
 - 1) The mechanism components move in the reverse direction against the loading operation.
- (4) When the cam slider reaches the position II, IC601 makes the capstan motor rotate in the reverse direction (LP X11) and takes up the tape at a specified torque using the clutch mechanism.
- (5) When the cam slider reaches the position I, it brakes the capstan motor to stop, and then stops the loading motor after 230ms passed.

<Cassette unloading>

- (1) Furthermore, IC601 makes the loading motor rotate in the reverse direction and also the capstan motor in reverse direction, applies braking force to the capstan motor by detecting the Switch-Detect ON --> OFF, and the capstan motor stops.
- (2) IC601 makes the loading motor stop after 200ms passed from sensing "OFF".
- (3) Also IC601 makes the loading motor rotate in the forward direction after 120ms passed.
- (4) IC601 makes the loading motor stop after 100ms passed from loading motor rotating in the forward direction.

[3] Stop mode

- (1) The cam slider is in the stop mode (position V) and each motor stops.
- (2) The mechanism status is as follows :
 - 1) The S, T guide rollers are in the loading status.
 - 2) The pinch roller is kept away from the capstan.
 - 3) The tension post is shifted to the reel disc side. That is, the band brake is released from the ON status and the back tension is also released.
 - 4) The S, T soft brakes are being applied.

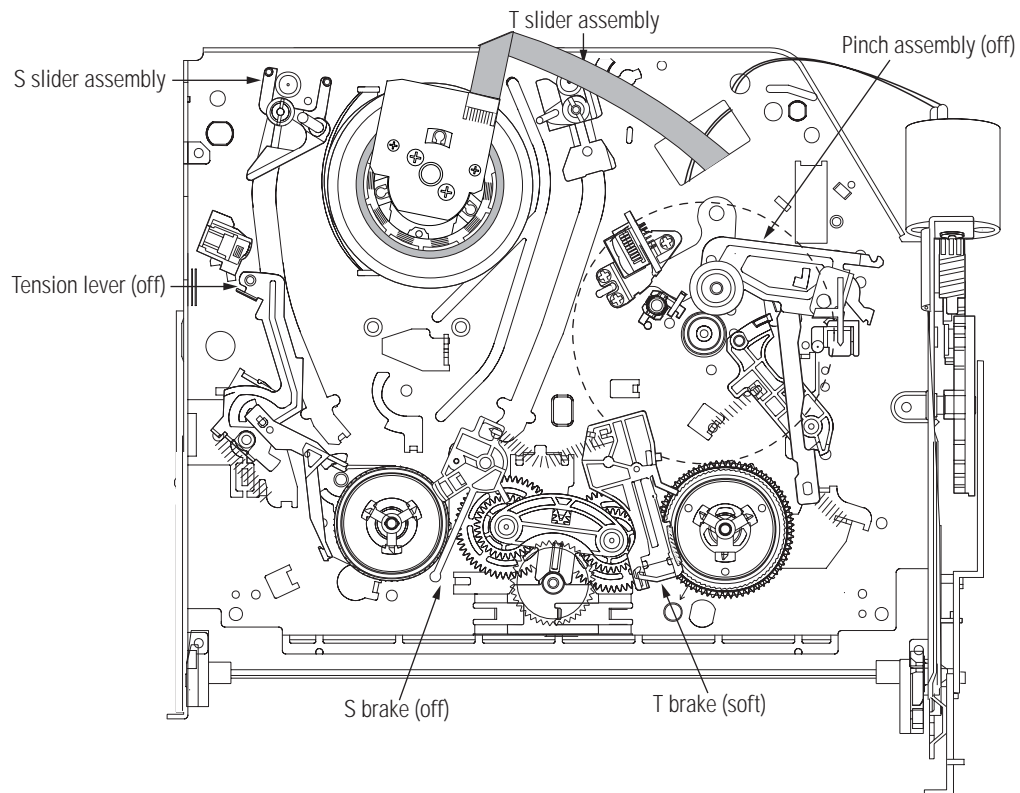


Fig. 14-25 Stop Mode (Position V)

[4] FF/REW mode

- (1) When the [REW] button is pressed in playback standby mode, the mode enters the FF/REW mode.
- (2) IC601 controls Capstan Motor Drive IC and makes the loading motor rotate in the forward direction.
The loading motor stops when the cam position reaches the position VI, VII (FF/REW mode).
The mechanism status is as follows :
 - 1) The pinch roller is OFF.
 - 2) The No. 9 guide is once loaded but immediately returned.
 - 3) The tension post is moved to the reel disc side. That is, the band brake is released from the ON status and the back tension is released.
 - 4) The clutch holder assembly is in the direct status and the capstan driving force is directly transmitted to the reel disc.
 - 5) Brakes for the reel discs are as follows :
 - ❶ VI position FF/REW 1 mode (S Brake : soft brake, T Brake : off)
 - ❷ VII position FF/REW 2 mode (S Brake : off, T Brake : soft brake)
- (3) IC601 makes the capstan motor rotate in the forward direction and the idle gear transmits the rotation to the S/T reel discs to take up the tape.

[5] FF/REW to STOP mode

- (1) When the [STOP] button is pressed in the REW mode, the mechanism enters the playback standby mode.
- (2) IC601 makes the loading motor rotate in the reverse direction and stops at the position V.
With this mode shift, the mechanism actuates S, T main brakes to stop the tape. Then, the capstan motor also stops by braking force 70ms after detecting “e” position.
- (3) IC601 makes the loading motor rotate in the reverse direction again and stops the loading motor when the cam slider reaches the position IV (playback mode), thus setting the playback standby mode.

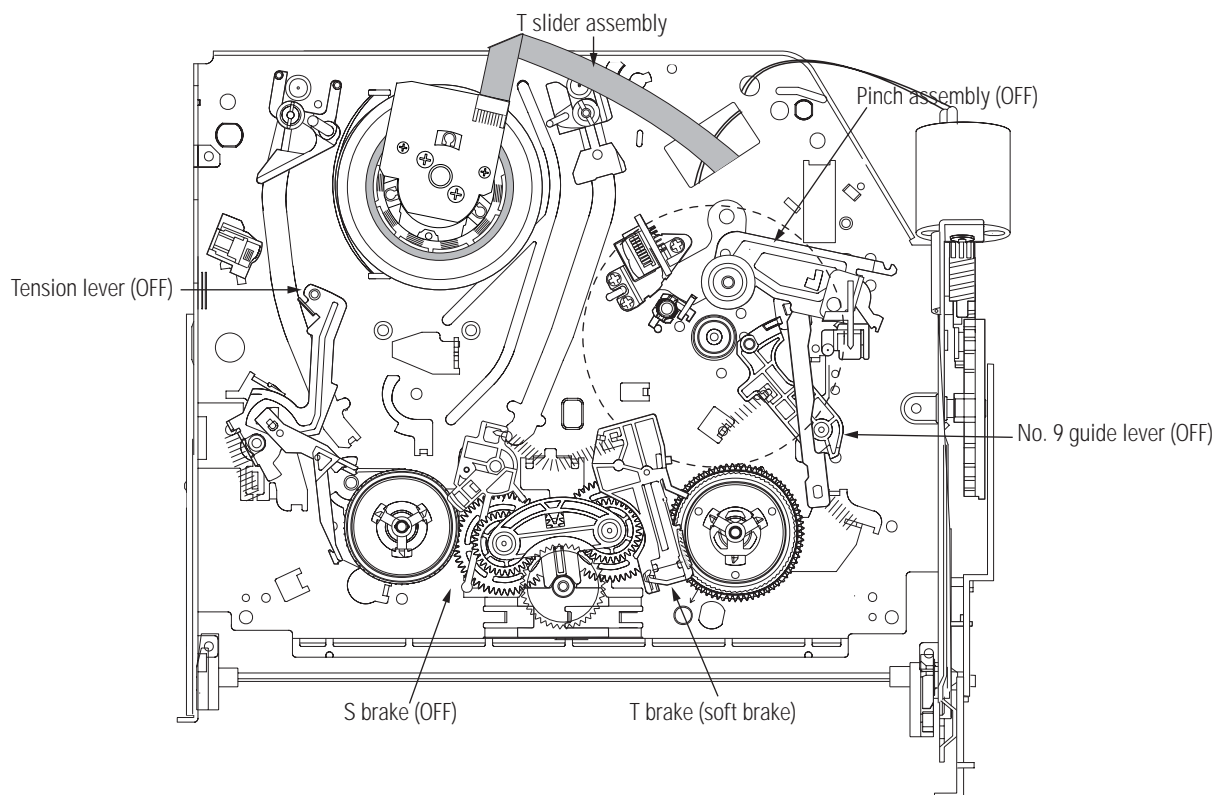


Fig. 14-26 FF/REW 2 Mode (Position VII)

[Playback mode]

- (1) When the [PLAY] button is pressed in the stop mode, the mechanism enters the playback mode.
- (2) IC601 controls cylinder motor drive IC and rotates the cylinder motor.
- (3) IC601 controls Capstan Motor Drive IC to rotate the loading motor in the reverse direction and stops the motor when the cam slider reaches the position IV (playback mode). (When operating from the playback standby mode, the cam slider has been already on the position IV.) The mechanism works as follows :
 - 1) The pinch roller moves toward the capstan side and press fits the capstan.
 - 2) The No.9 guide is loaded once and then returned immediately.
 - 3) The tension post touches the tape, the band braking force is applied, and the tension servo mechanism works.
 - 4) The clutch holder assembly enters clutched condition.
 - 5) S,T brakes are released.
- (4) IC601 makes the capstan rotate in the forward direction and feeds the tape. The idle gear transmits the rotation to the T reel disc and the reel disc takes up the tape at a constant torque by the clutch mechanism.
- (5) IC601 controls the video circuit and switches the playback screen.
- (6) The recording speed data identified by IC601 is displayed in the Led module.

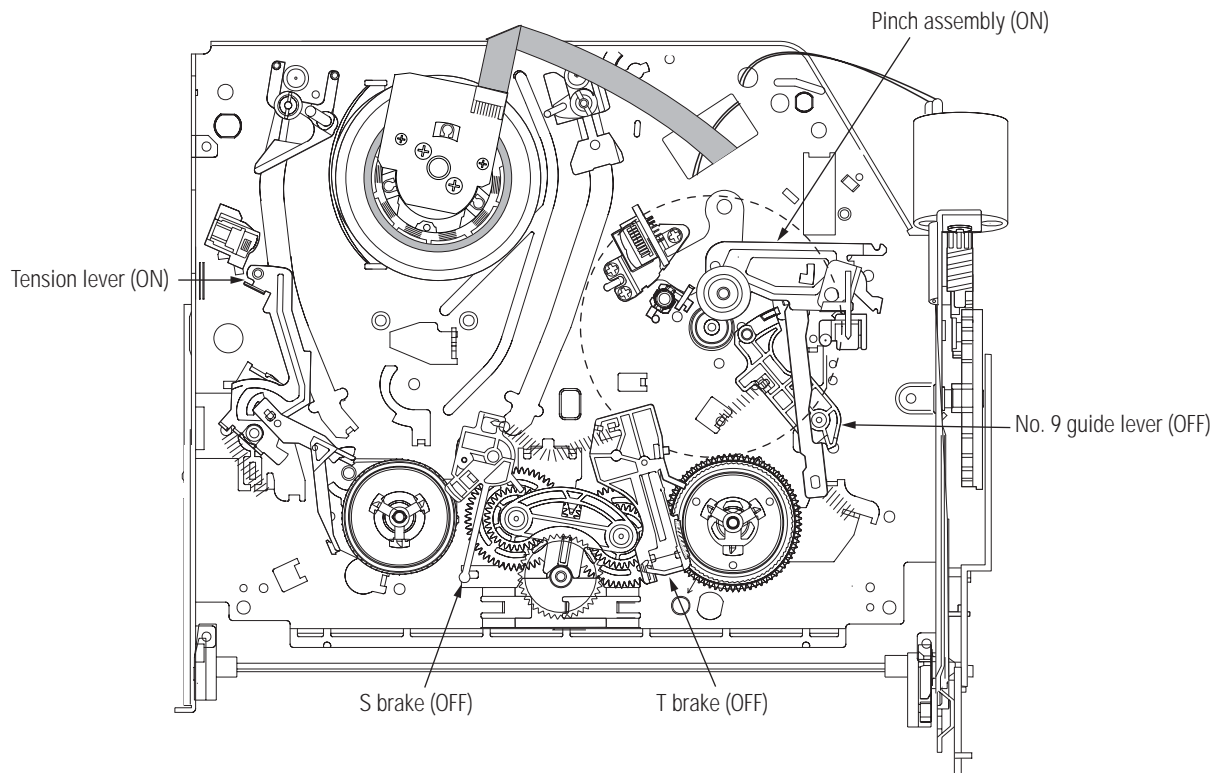


Fig. 14-27 Playback Mode (Position IV)

<Still mode>

- (1) When the [PAUSE] button is pressed in the playback mode, the mechanism enters the still mode.
The cam slider is in the position IV (playback mode), the cylinder motor is rotating, and the capstan motor is rotating in the forward direction.
- (2) IC 601 controls the audio circuit and actuates the audio mute function.
- (3) The capstan motor enters the intermittent operation mode and then stops.
- (4) IC 601 maintains the recording speed data just before the still operation.
- (5) In the slow mode, the capstan motor rotates continuously in the intermittent driving.

<FPS mode>

- (1) When the [FF] button is pressed in the playback mode, the mechanism enters the FPS mode (forward picture search). The cam slider is in the position IV (playback mode), the cylinder motor is rotating, and the capstan motor is rotating in the forward direction.
- (2) IC 601 controls the audio circuit to actuate the audio mute operation.
- (3) IC601 makes the capstan rotate at 7 times for SP, 21 times for SLP to feed the tape, respectively.
The tape is taken up at a constant torque by the clutch mechanism. (The mechanical operation is the same as that in the playback mode.)
- (4) The recording speed data identified by IC601 is displayed on the Led module.

<RPS mode>

- (1) When the [REW] button is pressed in the playback mode, the mechanism enters the RPS mode.
The cam slider is in the position IV (playback mode), the cylinder motor is rotating, and the capstan motor is rotating in the forward direction.
- (2) IC601 controls the audio circuit to actuate the audio mute operation.
- (3) IC601 controls Capstan Motor Drive IC to make the loading motor rotate in the reverse direction.
After 180ms the loading motor stops for 250ms. During the mode shift operation, the mechanism rotates the capstan motor in the forward direction for a constant time so that the tape is not slackened.
- (4) When the cam slider reaches the position “c” (loading motor stopped for 250ms), the capstan motor is rotated in the reverse direction for a constant time, and the idle gear is swung toward the S reel disc side.
Then, the loading motor rotates in reverse direction and shifts to the position III (RPS mode).
When the cam slider reaches the position III (RPS mode), the loading motor stops.
The mechanism status is as follows :
 - 1) The No.9 guide is loaded.
 - 2) The tension post is separated from the tape.
 - 3) The T soft brake is turned on.
 The capstan motor rotates in the reverse direction at 7 times for SP, 21 times for SLP to feed the tape in the REW direction, respectively. At the same time, the idle gear transmits the rotation to the S reel disc and the S reel disc takes up the tape by the clutch mechanism.
- (5) The recording speed data identified by IC601 is displayed on the Led module.

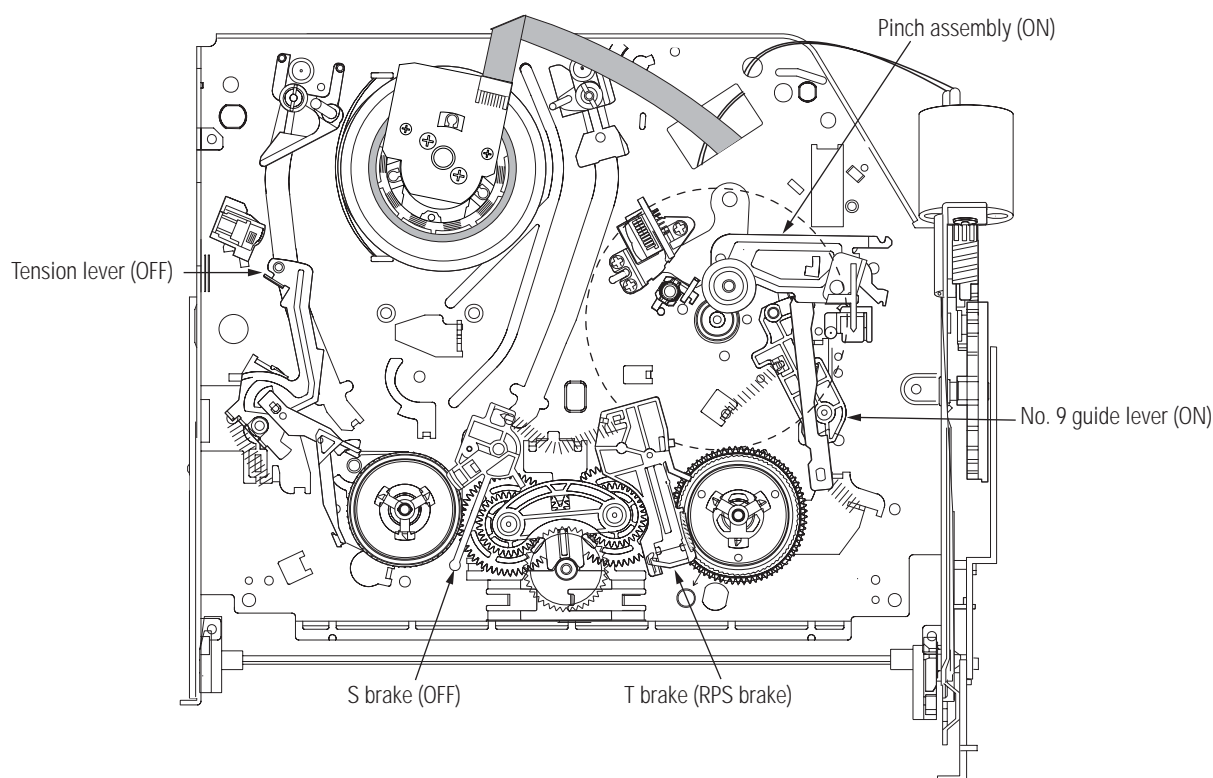


Fig. 14-28 RPS Mode (Position III)

[7] REC mode

<REC mode>

- (1) When the [REC] button is pressed in the stop mode, the mechanism enters the REC mode.
- (2) The cylinder motor starts and then the loading motor rotates in reverse direction.
The cam slider reaches the position IV (playback mode).
The tape is taken up at a constant torque. The mechanism operations are the same as those in the playback.
- (3) IC601 controls the audio circuit and video circuit to set the record enable mode.
- (4) Recording mute is released, thus setting the recording status. The CTL signal is output for recording.

<REC PAUSE mode>

- (1) When [PAUSE] button is pressed in the REC mode, the mechanism enters the REC pause mode.
- (2) IC601 controls the audio circuit and the video circuit, and releases the record enable mode and performs the rewinding for synchronous editing.
- (3) After completion of the rewinding for synchronous editing, the cam slider is in the position IV (playback mode), the cylinder motor is rotating, and the capstan motor and the loading motor stop.

MEMO

2. Product Specification


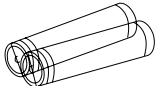
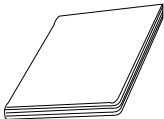
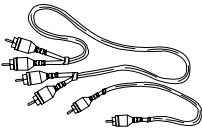
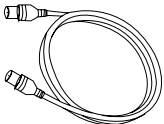
2-1 Product Specification

General	Rated Voltage	AC 220 - 240V, 50Hz
	Power Consumption	19 Watts
	Weight	3.9Kg
	Size	430mm x 282mm x 82mm
	Operating ambient Temperature	+5°C ~ +40°C
	Installation Conditions	Operation position : Horizontal, Relative humidity : Below 75%
Input	Video input (Rear)	Euro Scart socket : 1.0Vp-p (unbalanced) 75ohm
	Audio input (Rear)	Euro Scart socket : -8dBm, 47Kohm unbalanced
Output	RF out	UHF 21-69 (Initial CH60)
	Audio (DVD, VCR)	RCA jack, Euro Scart socket
	Audio (DVD only)	COAXIAL, RCA jack
	Video (DVD, VCR)	RCA jack, Euro Scart socket
	Video (DVD only)	S-Video out, RGB out : Euro Scart socket
VCR	Tape format	VHS type video tape
	Color system	PAL, NTSC4.43, NTSC playback on PAL TV
	Tuning system	B/G, D-K
	Video S/N	Above 43dB (standard recording)
	Resolution	Above 240 lines (standard recording)
	Audio S/N	Above 68dB (Hi-Fi), 39dB (Mono)
	Audio frequency characteristics	20Hz - 20KHz (Hi-Fi)
DVD	Disc	DVD, CD (12Cm,8Cm), DVD-RW, -R, DVD+RW, +R
	Audio S/N	95dB
	Audio dynamic range	105dB

2-2 Chassis Product Specification

	Features	V5500	V6500	V6500K	V7000K	V7500K	V8500	V9500
DVD	Progressive Scan	O	O	O	O	O	O	O
	DVD-Audio/SACD	-	-	-	-	-	-	O
	MPEG-4/ DIVX (PAL Model Only)	O (Option)	O	O	O	O	-	O
VCR	S-VHS Quasi Playback	O (Option)	O (Option)	O	O	O	O	O (Option)
	Head	6H VCR 2H VCR(CIS)	6H VCR	4H VCP	6H VCP	6H VCR	6H VCR	6H VCR
	Flash Memory Interface	-	-	-	-	-	10 In 2	-
	Karaoke	-	-	O	O	O	-	-
	Front A V Inputs	1	1	-	-	-	1	1
	Composite Video In/out	1/1	1/1	1/1	1/1	1/1	1/1	1/1
	S-Video	1	1	1	1	1	1	1
	SCART (PAL MODEL Only)	1 (PAL model)	2 (PAL Model)	-	-	-	-	2 (PAL Model)
	HMDI/DVI	-	-	-	-	-	-	O/-
	Component Output (Y/Pb/Pr)	1	1	1	1	1	1	1
	5.1CH Audio out	-	-	-	-	-	-	O
Jack	Audio in/Output (L R)	1/1	1/1	1/1	1/1	1/1	1/1	1/1
	Digital Audio Output	Coax	Coax	Coax	Coax	Coax Optical	Coax optical	Coax optical
Remote	Multi TV Control	Single	Single	Single	Single	Single	Multi	Multi

2-3 Option Product Specification

Description Fig	Description	Parts No	Remark
	Remote Control	AK59-00008D	Model standard of DVD-V5450/XEC
	Batteries for Remote Control	AC43-12002H	Model standard of DVD-V5450/XEC S.N.A
	Owner's Instructions	AK68-00646E	Model standard of DVD-V5450/XEC
	Audio & Video Cable	AC39-22017Z AC39-42001U	Model standard of DVD-V5450/XEC
	RF Cable	AC39-00017A	Model standard of DVD-V5450/XEC

2-4 Introduction to DVD

2-4-1 The Definition of DVD

DVD is the next generation medium and is the acronym of the Digital Versatile Disc or the Digital Video Disc, which maximizes the saving density of the disk surface using the MPEG-2 compression technology to enable the storage of 17G bytes of data on the same size CD.

1) 7 times the storage capacity of the conventional CD

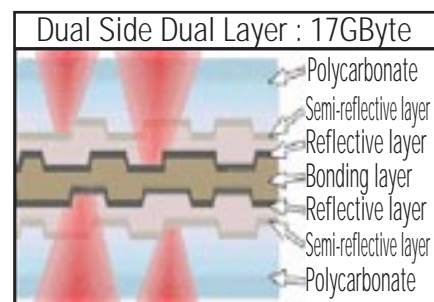
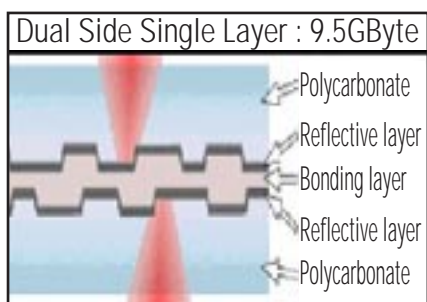
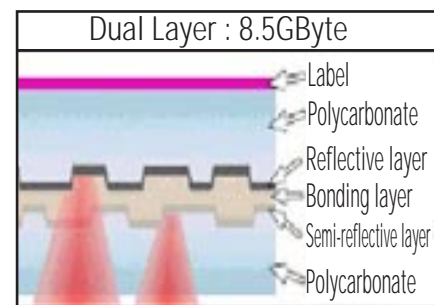
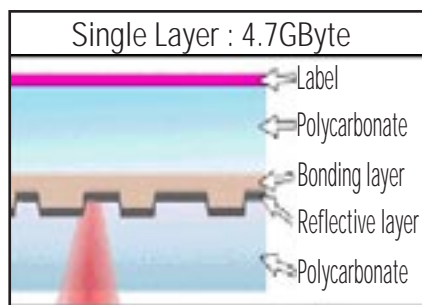
- Minimized the track pitch and pit size to 1/2 of conventional CD.
- Uses red laser with short-wavelength of 650nm (635nm).

• DVD Vs. CD-ROM

	CD-ROM	CD-R/RW	DVD-ROM	DVD-R/RW	DVD-RAM
Disc Thickness	1.2mm	1.2mm	0.6*2mm	0.6*2mm	0.6*2mm
Lens NA	0.45	0.45(0.5)	0.6	0.6	0.6
Laser wavelength	780um	780um	650um	650um	650um
Track pitch	1.6pm	1.6pm	0.74pm	0.74pm	0.615pm
Capacity	0.65GB	0.65GB	4.7GB	4.7GB	4.7GB
Track structure	Pit train	Groove	Pit train	Groove	Land/Groove

2) Disc Formats

DVD consists of two 0.6mm discs attached together, enabling access to the upper and lower side of the disk, and 4 sides could be used at maximum.



2-4-2 DVD Types

FORMAT	TYPE	APPLICATIONS
DVD-Video	Playback Only	High quality image and sound for movies and other video media.
DVD-ROM	Read Only	Multi-functional, multi-media software that requires large storage capacity.
DVD-Audio	Playback Only	High quality sound that exceeds the CD, multi-channel Audio.
DVD-R	1 Time Recording	As with CD-R, write only once
DVD-RAM	Rewritable (more than 100,000times)	This can be virtually used as hard-disk, with a random read-write access
DVD-RW	Rewritable (About 1000times)	Similar to DVD-RAM except than its technology features a separated read-write access more like phonograph than a hard disk.

2-5 DVD-Video Fromat

2-5-1 Main Features

- 1) Able to store up to 160 minutes of Movie by utilizing the MPEG-2 compression technology. (Aver. 133min.)
- 2) Enables more than 500 lines of horizontal resolution. (Class corresponding to the Master Tapes used in broadcasting stations)
- 3) Provides Dolby Digital 5.1ch Surround 3D sound, which enables theater quality sound (NTSC area).
 - For PAL areas, 1 of either MPEG-2 Audio or Dolby Digital must be selected.
- 4) Multi-Language
 - Able to store up to 8 languages of dubbing.
 - Able to store up to 32 subtitle languages.
- 5) Multi-Aspect Ratio
3TV Mode alternatives ; 16:9 Wide Screen (DVD Basic)/4:3 Pan & Scan/Letter Box.
- 6) Multi-Story
Possible to implement Interactive Viewing which enables the user to select the scenario.
- 7) Multi-Angle
Able to view the camera angle you selected among the scenes recorded with multiple camera angles.

Note ; The above media features must have the DVD Title that contains the appropriate contents to function properly.

2-5-2 Audio & Video Specifications

Classification		DVD-Video		Video-CD	LD
VIDEO	Compression	MPEG-2		MPEG-1	Analog
	Pixel	720 x 480		352 x 240	
	Horizontal resolution	Max. 500 Lines		Max. 250 Lines	Max.420 Lines
	Compression rate	1/40		1/140	Analog
	Transmission speed	Max. 9.8Mbps (variable)		1.15Mbps (fixed)	
	TV aspect	16:9 / 4:3		4:3	4:3
AUDIO	Audio	Max. 8 streams		2CH stereo	<div>2 Analog CH. 2 Digital CH. (16Bit/44.1KHz)</div>
	Recording type	Dolby Digital	Linear PCM	MPEG-1 Layer 2	
	Transmission rate	448Kbps/stream	6.144Mbps/stream	224Kbps	<div>or</div> <div>1 Analog CH. 1 Stream of Dolby Digital 2 Digital CH. (16Bit/44.1KHz)</div>
	Channel	5.1CH/stream	8CH/stream	2CH	
	Sampling frequency	48KHz	16, 20, 24Bit/48, 96KHz	16Bit/44.1KHz	

2-5-3 Detailed Feature

DVD-Video Feature 1

When Developing the DVD Software, various addition and modification is possible.


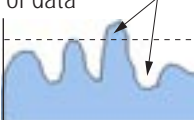
As the storage capacity increases, the DVD-Video separates the main data and the additional data such as the Multi-Function into different data areas, enabling the control of time-data ratio to provide the format that enables the flexible Software development

- 1 Movie (3.5Mbps)
 - + Subtitle (1 Language)
 - + Surround Audio (1 Language)
 - = 160min storage (4.673Gbytes)
- 1 Movie (3.5Mbps)
 - + Subtitle (4 Language)
 - + Surround Audio (4 Language)
 - = 160min storage (4.680Gbytes)
- 1 Music Video (4Mbps)
 - + 2ch High quality Audio (96kHz/24bit)
 - = 72min storage (4.648Gbytes)

DVD-Video Feature 2

Application of the MPEG-2 compression technology.

DVD-Video uses the variable compression technology, the MPEG-2 to compress the moving image optimally, minimizing the Data loss to Provide a clear, natural screen while increasing the storage time.

DVD-Video	<ul style="list-style-type: none"> • MPEG-2 (Variable compression : Max. 1/40) <ul style="list-style-type: none"> • Field unit compression. • Compression rate change according to the amount of Data. • Differentiates the still image and the moving image compression rate, reducing Data loss and enables efficient compression. 	 <p>Amount of data</p> <p>Time</p>
Video-CD	<ul style="list-style-type: none"> • MPEG-1 (Fixed compression : Max. 1/140) <ul style="list-style-type: none"> • Frame unit compression. • Compresses all data using the same ratio. - Fast movements are jagged, and unnatural 	 <p>Amount of data</p> <p>Loss area</p> <p>Time</p>

DVD-Video Feature 3**High quality surround audio.**

DVD-Video can store the audio using the 5.1ch Dolby Digital compression or the advanced Linear PCM method, providing the better-than-CD quality and theater like audio quality.

- **DTS (Digital Theater System)**

Home theatre and music playback in the home, DTS provides high quality 5.1-channel surround sound with many extras not offered by other consumer formats. As well as handling DTS-branded releases from a growing number of music labels and consumer software producers, DTS provides enhanced 6.1 matrix and DTS 6.1 discrete decoding that envelopes the listener in sound. DTS technology is featured in a wide cross section of receiver/pre-amplifiers, DVD players and add-on components from leading consumer audio vendors

- **Dolby Digital (AC-3)**

- Unlike the traditional Dolby pro-Logic method, the Dolby Digital method separates all 5 main channels (Front L/R, Center, Surround (Rear) L/R) and the Sub woofer to provide live surround audio.
- Using the Down Mix method, the conventional Dolby Pro-Logic and Stereo are all compatible.
- Each separated channels are played back at CD quality sound. (Frequency band: 20Hz ~ 20KHz)

- **Linear PCM (Pulse Code Modulation)**

- Provides the high quality Digital sound without the audio data compression.
- Various Digital Recordings are possible as shown in the table to the right.

Sampling Frequency	Bit Rate
48KHz	16bit
	20bit
	24bit
96KHz	16bit
	20bit
	24bit

- **Dolby Digital compatible Audio Mode**

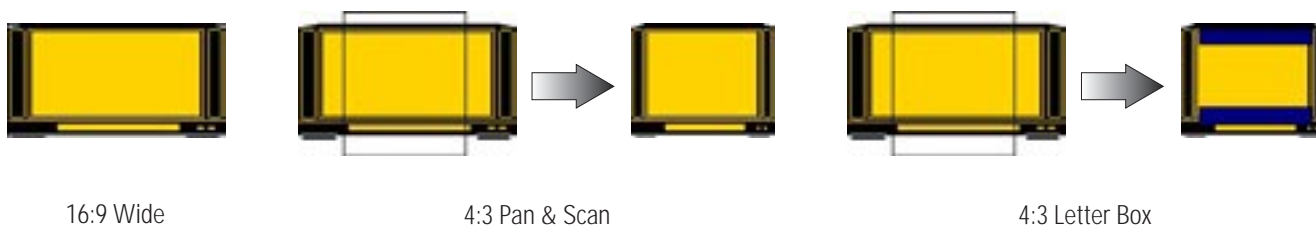
Audio Coding Mode	Channel Format					Remark
		Front		Surround (Rear)		
	L	C	R	L	R	
1/0		0				Mono
2/0	0		0			Stereo
3/0	0	0	0			Surround
2/1	0		0	Mono		
3/1	0	0	0	Mono		
2/2	0		0	0	0	
3/2	0	0	0	0	0	

DVD-Video Feature 4**Multi-Language**

- Audio Dubbing - Max. 8 Languages
- Subtitle - Max. 32 Languages. Capable of storing, and selectiong.
- Linear PCM (Pulse Code Modulation)

DVD-Video Feature 5**Multi-Aspect**

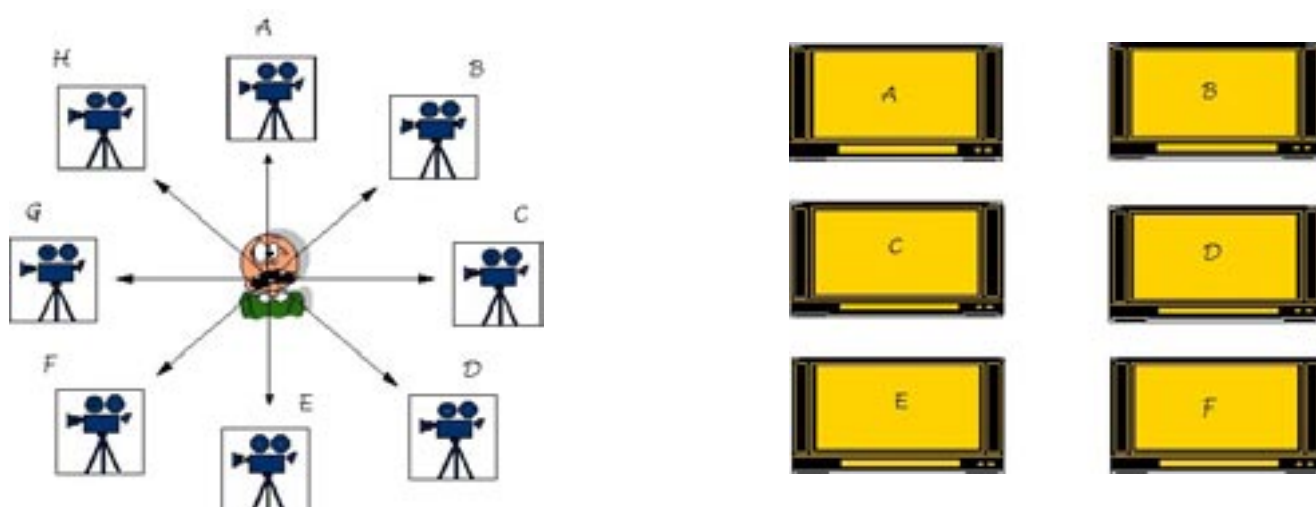
- Unlike the conventional VCD or LD, DVD-Video has the default of 16:9 Wide, and can be viewed using the conventional 4:3 TV, enabling the expansion of viewer selection capabilities.
- 16 : 9 TV : Wide Mode (16:9 Wide Full Screen)
- 4 : 3 TV : Letter Box Mode, Pan & Scan Mode



Note ; This function is disc-dependent, may not work on all DVDs.

DVD-Video Feature 6**Multi-Angle**

- Up to 9 angles of view may be stored, enabling the viewer to select a specific viewpoint at a given time.
--> Especially, for the Music Video and Sports Title, this provides a more lively image of the scene.



Note ; This function is disc-dependent, may not work on all DVDs.

DVD-Video Feature 7

Multi-Story

- DVD-Video provides the environment suitable for the bi-directional Software development, providing multiple scenarios. This feature enables the Multi-Story function.

OPTION

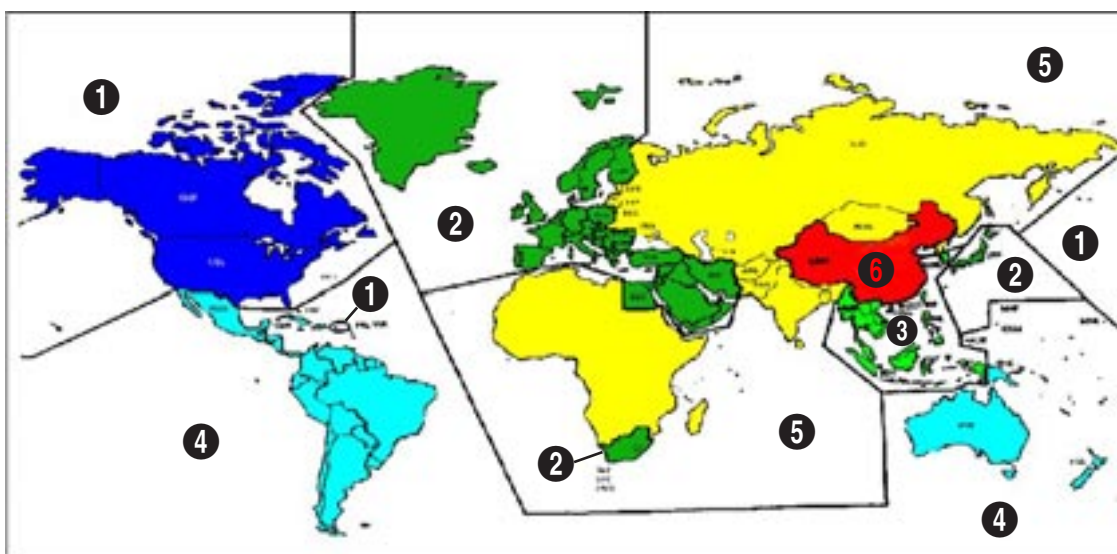
Parental Lock

- For the titles that are not suitable for children viewing, Parental Locks are set, requesting user defined passwords for viewing
- Parental Locks may be set on specific frames of the Title, enabling the player to skip those frames during playback.

COPYRIGHT

Regional Code & Macrovision

- Classify the world into 6 regions, and if the DVD Title and the Player's "Regional Code" do not agree, playback is prohibited.
- **Regionnal Coding is optional for the Soft developers (Region 0 All Code), but the Hardware developers must adopt the appropriate regionnal code for sale.**
 - Region 1 : The United States and its territories, Canada.
 - Region 2 : Europe, Japan, Greenland, Egypt, South Africa, the Middle East.
 - Region 3 : Taiwan, Hongkong, Korea, South East Asia.
 - Region 4 : Mexico, South America, Australia, New Zealand.
 - Region 5 : Russia, Eastern Europe, India, Africa.
 - Region 6 : China.
 - Region 0 : Worldwide (All Code)

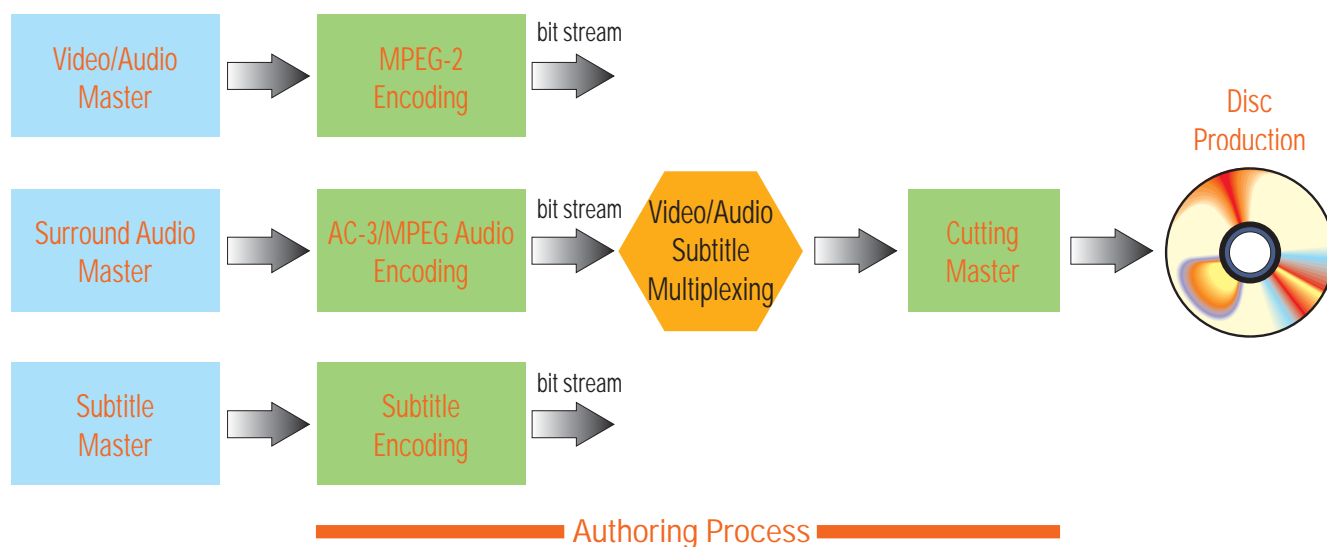


- Adoption of the Macrovision System disables the copying on to other media.

Remark

DVD-Video Authoring Process

- The image quality of the DVD-Video may vary according to the quality of the Master and the Authoring Process
 - The image quality of the DVD-Video varies according to the Digital Mastering Source such as the conventional LD, VCD, or Original Film.
 - Different Authoring Process are used according to the Software developers, and this may affect the DVD image quality.
- **Authoring Process**

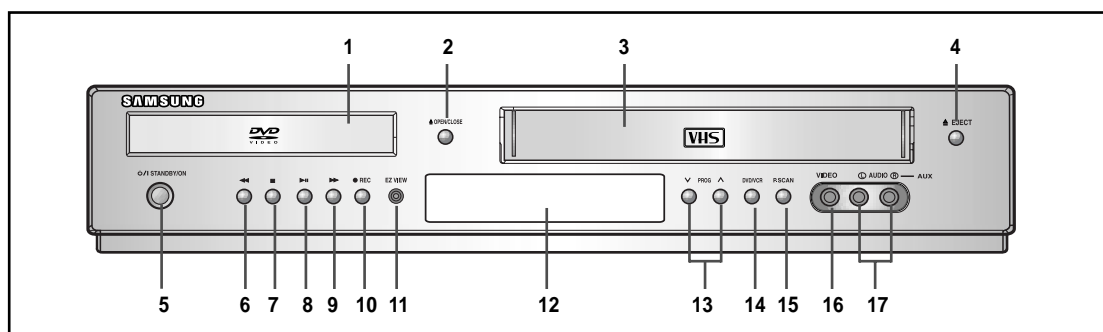


MEMO

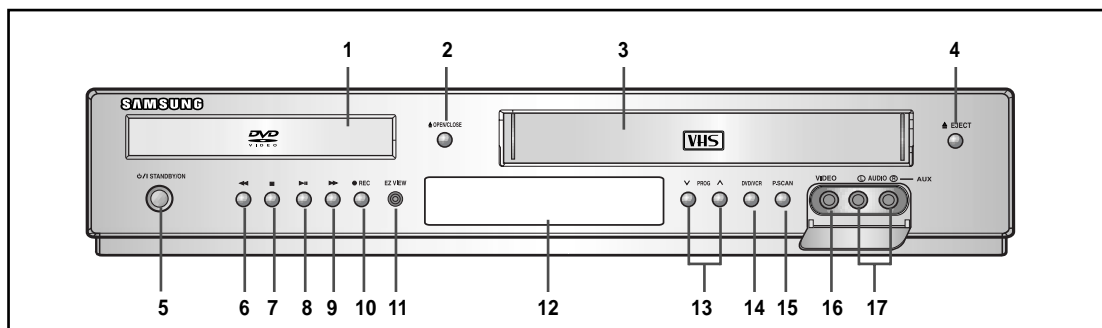
12. Operating Instructions

Overviews

Front View of the DVD-VCR (DVD-V5500)

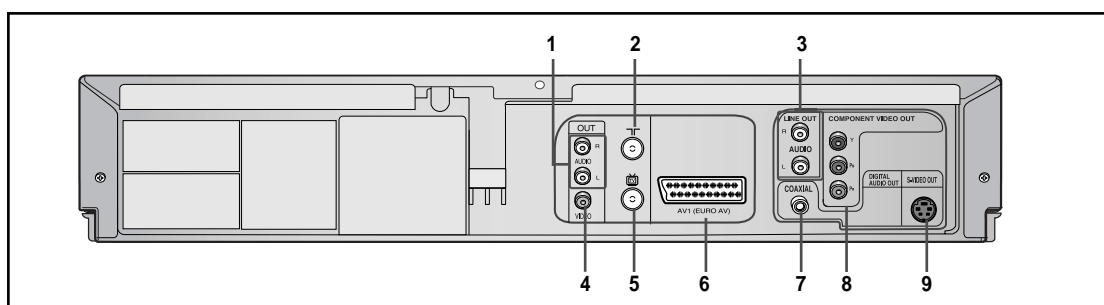


Front View of the DVD-VCR (DVD-V6500)



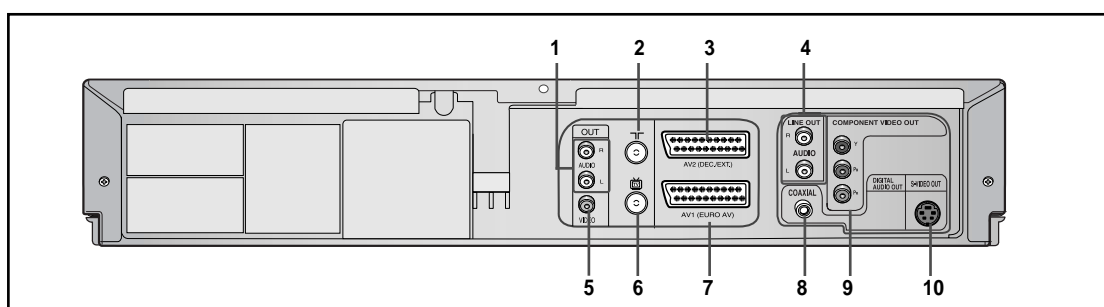
- | | |
|-------------------------------|------------------------------------|
| 1. DVD DECK | 9. FAST FORWARD / SKIP NEXT BUTTON |
| 2. OPEN/CLOSE BUTTON | 10. RECORD BUTTON |
| 3. VIDEO CASSETTE COMPARTMENT | 11. EZ VIEW BUTTON |
| 4. EJECT BUTTON | 12. FRONT PANEL DISPLAY |
| 5. STANDBY/ON BUTTON | 13. PROGRAMME SELECTION BUTTON |
| 6. REWIND/SKIP BACK BUTTON | 14. DVD/VCR SELECT BUTTON |
| 7. STOP BUTTON | 15. PROGRESSIVE SCAN MODE BUTTON |
| 8. PLAY/STILL BUTTON | 16. AUX VIDEO INPUT JACK |
| | 17. AUX AUDIO L, R INPUT JACK |

Rear View of the DVD-VCR (DVD-V5500)



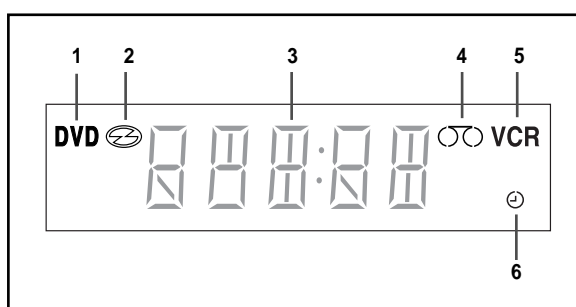
- | | |
|--------------------------------------|--|
| 1. AUDIO L, R OUT SOCKETS | 6. AV1 (EURO AV) IN/OUT SCART (EURO-21) SOCKET |
| 2. AERIAL IN CONNECTOR | 7. DIGITAL AUDIO OUT SOCKET (COAXIAL) |
| 3. AUDIO L, R OUT SOCKETS (DVD ONLY) | 8. COMPONENT VIDEO OUT SOCKETS |
| 4. VIDEO OUT SOCKET | 9. S-VIDEO OUT JACK |
| 5. OUT TO TV CONNECTOR | |

Rear View of the DVD-VCR (DVD-V6500)



- | | |
|---|--|
| 1. AUDIO L, R OUT SOCKETS | 7. AV1 (EURO AV) IN/OUT SCART (EURO-21) SOCKET |
| 2. AERIAL IN CONNECTOR | 8. DIGITAL AUDIO OUT SOCKET (COAXIAL) |
| 3. AV2 (DEC./EXT.) SCART (EURO-21) SOCKET | 9. COMPONENT VIDEO OUT SOCKETS |
| 4. AUDIO L, R OUT SOCKETS (DVD ONLY) | 10. S-VIDEO OUT JACK |
| 5. VIDEO OUT SOCKET | |
| 6. OUT TO TV CONNECTOR | |

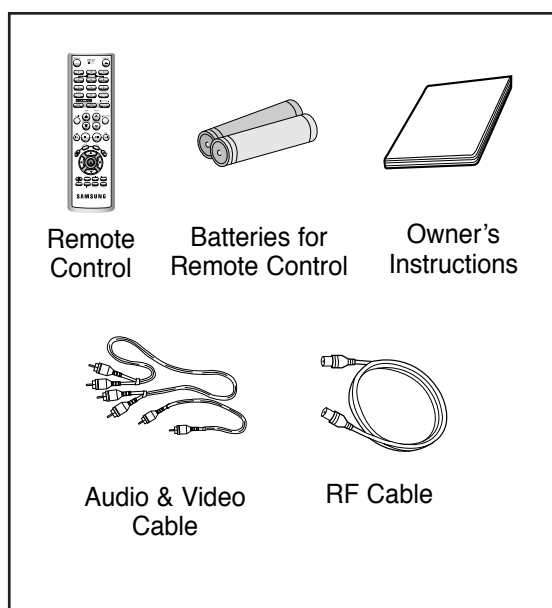
Display Indicators



1. The DVD Deck is active.
2. A DVD, CD or SVCD is loaded.
3. The time, counter position, time remaining or current deck status is displayed.
4. VHS tape is inserted.
5. The VCR Deck is active.
6. A Timer Recording is programmed or in progress.

Accessories

You have just purchased a SAMSUNG Video Cassette Recorder (DVD-VCR). Together with your DVD-VCR, you will find the following accessories in the box.

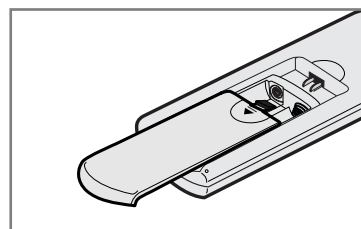


Inserting Batteries in the Remote Control

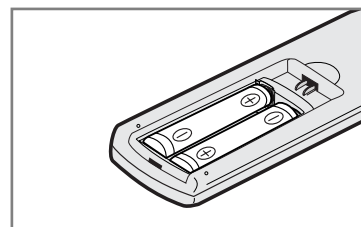
You must insert or replace the batteries in the remote control when you:

- Purchase the DVD-VCR
- Find that the remote control is no longer working correctly

- 1 Push the tab in the direction of the arrow to release the battery compartment cover on the rear of the remote control.



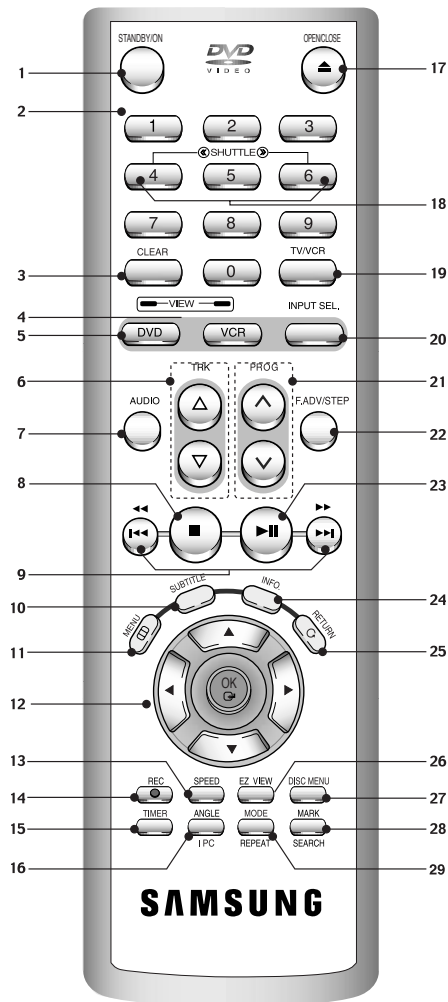
- 2 Insert two AAA, RO3 or equivalent batteries, taking care to respect the polarities:
 - + on the battery with + on the remote control
 - – on the battery with – on the remote control



- Do not mix different battery types (manganese and alkaline for example).

- 3 Replace the cover by aligning it with the base of the remote control and pushing it back into place.

Tour of the Remote Control



1. **STANDBY/ON**
Used to turn the power on or off.
2. **Numeric Buttons**
3. **CLEAR**
Used to clear a preset TV station.
Used to cancel a preset recording.
Used to cancel a preset mark.
Used to set the tape counter to zero.
Used to resume normal play during random play.
4. **VCR**
Used to operate VCR.
5. **DVD**
Used to operate DVD.
6. **TRK Δ / ∇**
Used to adjust picture alignment manually to obtain the best possible picture during playback.
7. **AUDIO**
Used to access various audio functions.

8. **STOP (■)**
Used to stop during playback.
9. **SEARCH/SKIP (\ll / \gg , $\ll\ll$ / $\gg\gg$)**
Used to search forward or backward through a disc.
Used to skip the title, chapter, or track.
10. **SUBTITLE**
Used to change the DVD's subtitle language.
11. **MENU**
Used to display the on-screen menu.
12. **OK/ \triangle / \triangleright / \triangle / ∇**
Used to control the cursor in the on-screen menu and confirm your choice.
13. **SPEED**
Used to select the recording speed.
14. **REC (●)**
Used to make a recording on cassette.
15. **TIMER**
Used to activate the timer recording of a programme.
16. **ANGLE**
Used to access various camera angles on a DVD.
IPC (Intelligent Picture Control)
Used to adjust the sharpness of the picture.
17. **OPEN/CLOSE**
Used to open and close the disc and video cassette tray.
18. **SHUTTLE**
Used to play a sequence at variable speeds.
19. **TV/VCR**
Used to select TV or VCR.
20. **INPUT SEL.**
Used to select a external input signal.
21. **PROG \wedge / \vee**
Used to select a TV programme.
22. **F.ADV/STEP**
Used to advance a sequence frame by frame.
23. **PLAY/PAUSE (\triangleright ||)**
Used to play or pause during playback.
24. **INFO.**
Used to display the current setting or disc status.
25. **RETURN**
Used to return to a previous menu.
26. **EZ VIEW**
Used to adjust the aspect ratio on a disc.
27. **DISC MENU**
Used to display a disc menu.
28. **MARK**
Used to mark a position while playing a disc.
SEARCH
Used to search for a specific sequence.
29. **MODE**
Used to select the programme or random play.
REPEAT
Used to allow the repeat play a title, chapter, track, disc or A-B.



Connections



Quick Overview

A Quick overview presented in this guide will give you enough information to start using the recorder.

Connecting DVD-VCR to the TV using the Coaxial Cable



Connecting DVD-VCR to the TV using the SCART Cable



Connecting DVD-VCR to a Satellite Receiver or Other Equipment



Plug & Auto Set up

- *Quick Overview* 10
- *Connecting DVD-VCR to the TV using the Coaxial Cable* 11
- *Connecting DVD-VCR to the TV using the SCART Cable* 11
- *Connecting DVD-VCR to a Satellite Receiver or Other Equipment* 12
- *Plug & Auto Set up* 13

Connecting DVD-VCR to the TV using the Coaxial Cable

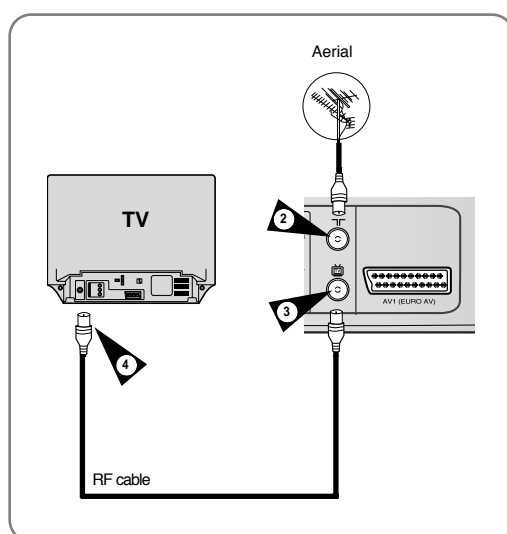
To receive television programmes a signal must be received from one of the following sources:

- An outdoor aerial
- An indoor aerial
- A cable television network
- A satellite receiver



- Make sure that both the television and the DVD-VCR are switched off before connecting the cables.

- 1 Remove the aerial or network input cable from the television.
- 2 Connect this cable to the 75Ω coaxial socket marked on the rear of your DVD-VCR.
- 3 Plug the coaxial cable supplied into the socket on your DVD-VCR.
- 4 Plug the other end of the coaxial cable into the connector previously used for the aerial on the television.



Connecting DVD-VCR to the TV using the SCART Cable

You can connect your DVD-VCR to the television using the SCART cable if the appropriate input is available on the television. You thus:

- Obtain better quality sound and pictures
- Simplify the setting up procedure of your DVD-VCR



- Regardless of the type of connection chosen, you must always connect the coaxial cable supplied. Otherwise, no picture will be visible on the screen when the DVD-VCR is switched off.
- Make sure that both the television and the DVD-VCR are switched off before connecting the cables.

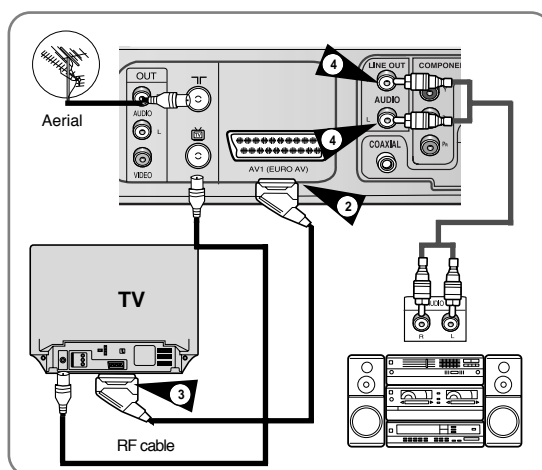
- 1 Connect the coaxial cable.
- 2 Connect one end of the SCART cable to the AV1 (EURO AV) socket on the rear of the DVD-VCR.
- 3 Plug the other end into the appropriate connector on the television.

Connecting the Audio Output Cable

You can connect your DVD-VCR to a Hi-Fi system.

Example: You wish to take advantage of the quality of your Hi-Fi stereo system when watching a programme or recording via your DVD-VCR.

- 4 Plug the audio output cable into the audio connectors on the rear of your DVD-VCR.
- 5 Plug the other end of the audio cable into the appropriate input connectors on your Hi-Fi stereo system.



Connecting DVD-VCR to a Satellite Receiver or Other Equipment

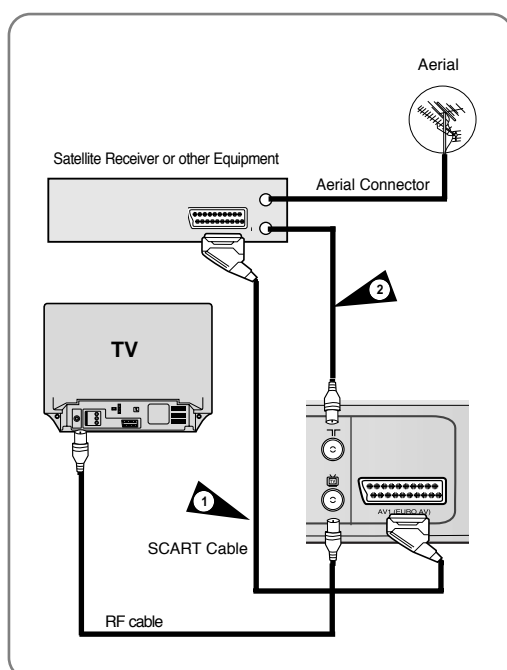
You can connect your DVD-VCR to a Satellite receiver or other DVD-VCR using the SCART cable if the appropriate outputs are available on the equipment chosen. The following illustrations give a few examples of the connection possibilities.

Connections

1 AV1(EURO AV): By means of 21-pin Scart Cable

Plug the SCART Cable with satellite receiver or other equipment into the AV1 (EURO AV) socket on the rear of the DVD-VCR. After making this connection, select the source by pressing the **INPUT SEL.** button for the **AV1** input sources.

- #### 2 By means of RF Coaxial Cable
- After making this connection, you must preset the station received through the satellite tuner. RF output channel of the satellite receiver should be adjusted away from channel 36, which is used by the DVD-VCR, e.g. re-adjust to channel 33.



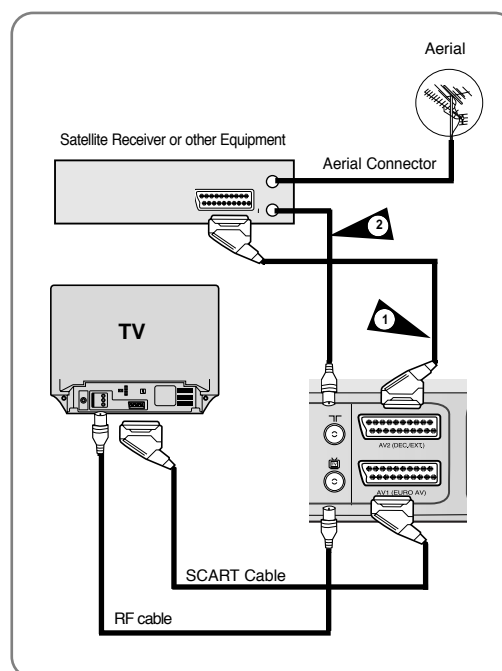
* DVD-V6500

1 AV2 IN: By means of 21-pin Scart Cable

Plug the SCART Cable with satellite receiver or other equipment into the AV2 (DEC./EXT.) socket on the rear of the DVD-VCR. After making this connection, select the source by pressing the **INPUT SEL.** button for the **AV2** input sources.

2 By means of RF Coaxial Cable

After making this connection, you must preset the station received through the satellite tuner. RF output channel of the satellite receiver should be adjusted away from channel 36, which is used by the DVD-VCR, e.g. re-adjust to channel 33.



Plug & Auto Set up

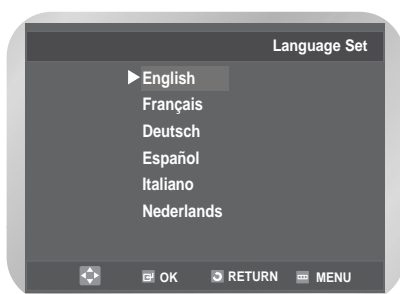
Your DVD-VCR will automatically set itself up when it is plugged into the mains for the first time. TV stations will be stored in memory. The process takes a few minutes. Your DVD-VCR will then be ready for use.

- 1 Connect the coaxial cable as indicated on page 11. (Connecting Your DVD-VCR to the TV Using the Coaxial Cable)

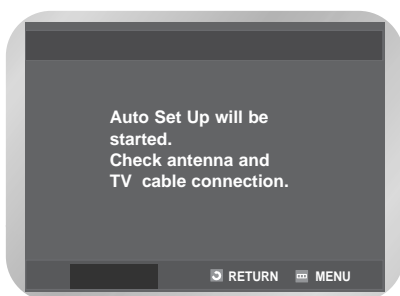
- 2 Plug the DVD-VCR into the mains.
 - "Auto" in the front panel display flickers.



- 3 The Language Set menu is displayed. Press the ▲ or ▼ button, move the selection bar to select the desired language then press OK button.



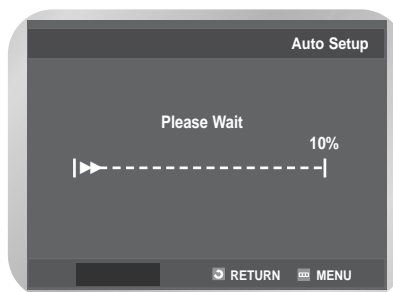
- 4 Start the auto setup.



5

Start the auto scanning.

The number of stations automatically stored by the DVD-VCR depends on the number of stations that it has found.



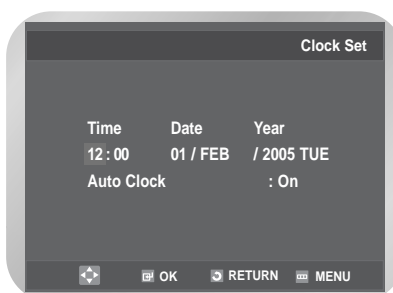
6

The current time and date are displayed automatically.

Check the date and time.

if it is :

- Incorrect, refer to page 15.
- Correct, press the **RETURN** button twice to exit the menu.



Note

- Now, you only have to switch the DVD-VCR on and it is ready for use.
- Function for "Plug & Auto Set Up" is fixed already. So if you want to change this fixed one, you can change. (refer to "Presetting the Stations Automatically" on page 17)

Settings

Settings

- *Tuning Your Television for the DVD-VCR* . . 14
- *Progressive Scan Mode* 15
- *Setting the Date and Time* 15
- *Setting the Menu Language* 16
- *Presetting the Stations Automatically* 17
- *Presetting the Stations Manually* 18
- *Clearing a Preset Station* 19
- *Changing the Preset Station Table* 20
- *Selecting the RF OUT Sound Mode*
(B/G-G/K) 21
- *Setting the VCR Output Channel* 21

Tuning Your Television for the DVD-VCR

Your DVD-VCR contains a 24-hour clock and calendar used to:

To view pictures from your DVD-VCR when a Scart cable is used, the television must be set to the audio/video mode (AV).

- 1 Switch on the television.
- 2 Switch on the DVD-VCR by pressing the **⏻/STANDBY/ON** on the front of the DVD-VCR or **STANDBY/ON** on the remote control.
- 3 Select a programme position on the television to be reserved for use with your DVD-VCR.
- 4 Insert the video cassette in the DVD-VCR. Check that the DVD-VCR starts reading the cassette; if not, press the **▶II** button.
- 5 Start a scan on your television or set the television to UHF channel 36.
- 6 Fine tune the television until the pictures and sound are obtained clearly.
- 7 When the picture and sound are perfectly clear, store this channel at the desired programme position on the television. That programme is now reserved for use with your DVD-VCR.

Progressive Scan Mode

You need a TV supporting the progressive scan input function to see the progressive video output. You have to set up the TV menu to the progressive scan input.

- 1 Press the **P.SCAN** button on the front of the DVD-VCR when you have finished connecting a TV.
A message is displayed.



- 2 Press the **OK** button to confirm Progressive scan mode.



Note

- If your TV does not have Progressive scan mode, there will be no signal on the screen. If you press the **P.SCAN** button, it will be changed to Interlace scan mode.
- Consult your TV User's Manual to find out if your TV supports Progressive Scan. If Progressive Scan is supported, follow the TV User's Manual's instructions regarding Progressive Scan settings in the TV's menu system.
- Depending on your TV, the Method of connection may differ from the illustration above.
- What is "Progressive Scan"?
Progressive scan has twice as many scanning lines as the interlace output method has. Progressive scanning method can provide better and clearer picture quality.
- Progressive output method
Not every HD TV is compatible with this product. Depending on the product, there can be some error in the screen. On the problem of progressive resolution, we recommend users to change the TV setup to the standard resolution output. Please contact our service center if there is any problem in the compatibility of the product's progressive output with TV.

Setting the Date and Time

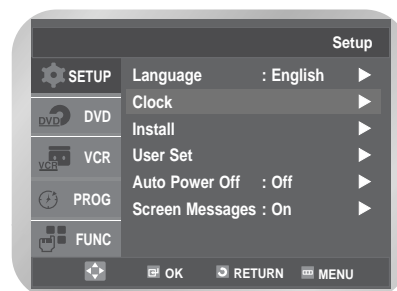
Your DVD-VCR contains a 24-hour clock and calendar used to:

- Automatically stop programme recording
- Preset your DVD-VCR to record a programme automatically

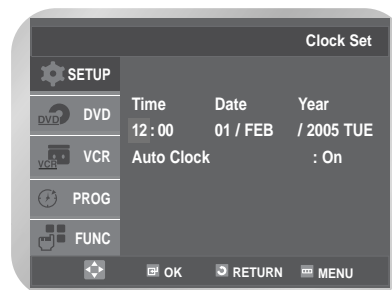
You must set the date and time when you purchase the DVD-VCR.

- The time and date are set automatically from the broadcast signal. If the signal is weak or ghosting occurs, the time and date may not be set automatically. In this case, they should be set manually.
- Do not forget to reset the time when you change clocks from winter to summer time and vice versa.

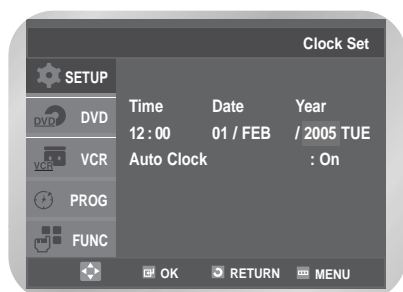
- 1 Press the **MENU** button.
The **Setup** menu is displayed.
Press the **OK** or **▶** button.
Press the **▲** or **▼** button to select **Clock**.



- 2 Press the **OK** or **▶** button.
The **Clock Set** menu is displayed.



- 3** Press the ◀ or ▶ button to select the hour, minutes, day, month, and year. The selected option is highlighted. Press the ▲ or ▼ button to set them. The day of the week is displayed automatically.

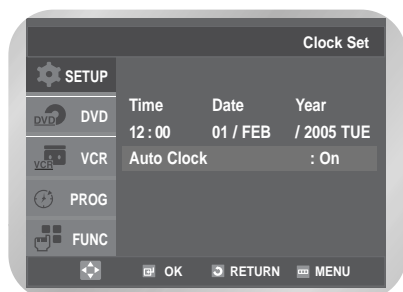


- You can hold the ▲ or ▼ button down to scroll more quickly through the values.

Settings

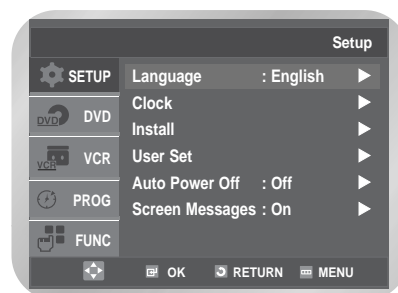
Setting the Clock Automatically

- 4** Press the ◀ or ▶ button to select **Auto Clock**. Press the ▲ or ▼ button to select **On**.

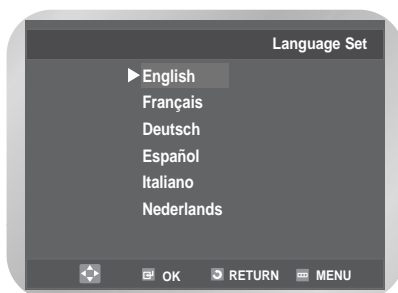


Setting the Menu Language

- 1** Press the **MENU** button. The **Setup** menu is displayed. Press the **OK** or ▶ button. The **Language** is selected.



- 2** Press the **OK** or ▶ button again. The **Language Set** menu is displayed. Press the ▲ or ▼ button to select language you want. Press the **OK** or ▶ button.



Presetting the Stations Automatically

You do not need to preset the stations if you have already set them automatically (refer to "Plug & Auto Set Up" on page 13).

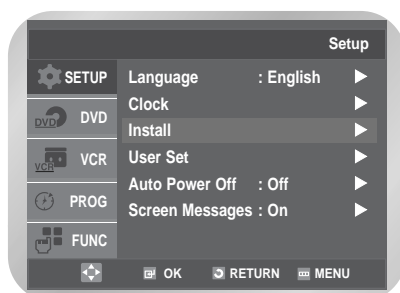
Your DVD-VCR contains a built-in tuner used to receive television broadcasts.

You must preset the stations received through the tuner. This can be done:

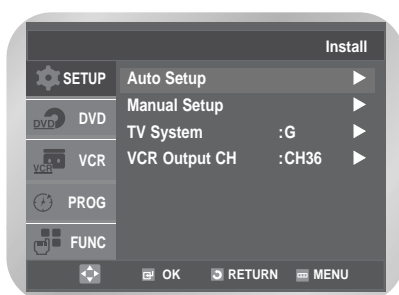
- Plug & Auto Set up (refer to page 13)
- Automatically
- Manually (refer to page 18)

You can store up to 80 stations.

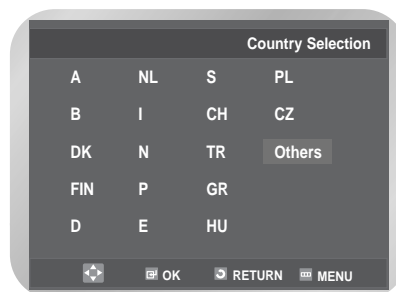
- 1 Press the **MENU** button.
The **Setup** menu is displayed.
Press the **OK** or **▶** button.
Press the **▲** or **▼** button to select **Install**.



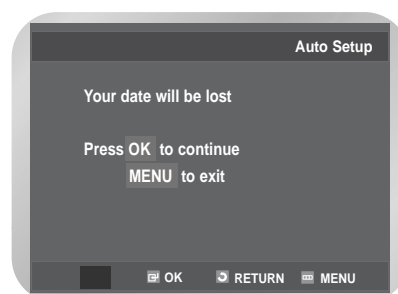
- 2 Press the **OK** or **▶** button.
Press the **▲** or **▼** button to select **Auto Setup**.



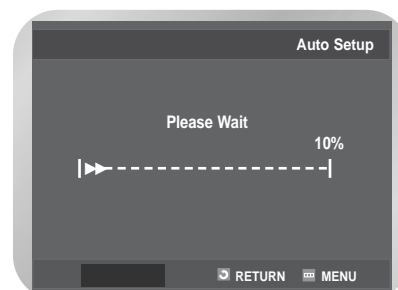
- 3 Press the **OK** or **▶** button again.
The **Country Selection** menu is displayed.
Press the **◀/▶**, **▲/▼** buttons to select your country.



- 4 Press the **OK** or **▶** button again.
A message is displayed, indicating that any channels already preset on your DVD-VCR will be deleted.



- 5 Press the **OK** to start the auto scanning.
The message **Please Wait** is displayed.
If you wish to cancel the auto scanning before the end, press the **MENU** button.
The first frequency band is scanned and the first station found is displayed and stored.
The DVD-VCR then searches for the second station and so on.
When the automatic scanning procedure has finished, the DVD-VCR switches automatically to programme 1.



- If you wish to cancel the auto scanning before the end, press the **MENU** button.



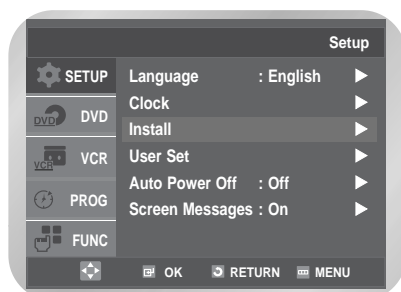
- The number of stations automatically stored by the DVD-VCR depends on the number of stations that it has found.
- The time and date are set automatically from the broadcast signal. If the signal is weak or ghosting occurs, the time and date may not be set automatically. In this case, they should be set manually (refer to page 15).
- Once the auto scanning procedure has finished, some stations may have been stored more than once; select the stations with the best reception and delete the ones no longer required (refer to page 20).

Settings

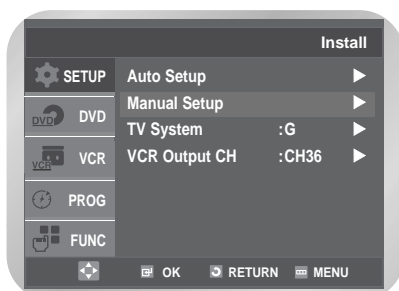
Presetting the Stations Manually

You do not need to preset the stations manually if you have already set them automatically.

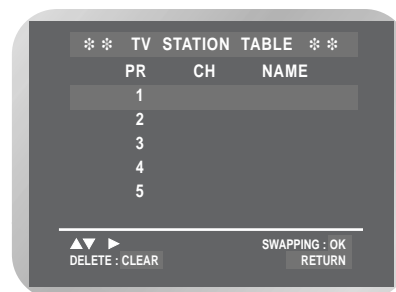
- 1 Press the **MENU** button.
The **Setup** menu is displayed.
Press the **OK** or **▶** button.
Press the **▲** or **▼** button to select **Install**.



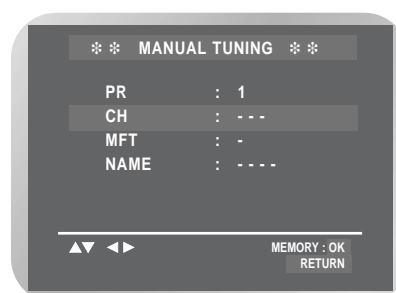
- 2 Press the **OK** or **▶** button.
Press the **▲** or **▼** button to select **Manual Setup**.



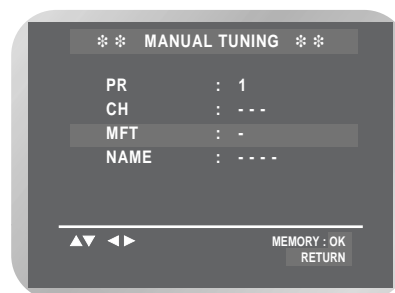
- 3 Press the **OK** or **▶** button.
The **TV STATION TABLE** menu is displayed.
Press the **▲** or **▼** button to select the required programme number.



- 4 Press the **▶** button to preset the station.
The **MANUAL TUNING** menu is displayed.
Press the **▲** or **▼** button to select **CH**.
Press the **◀** or **▶** button to start scanning the channels.
The frequency band is scanned and the first station found is displayed.

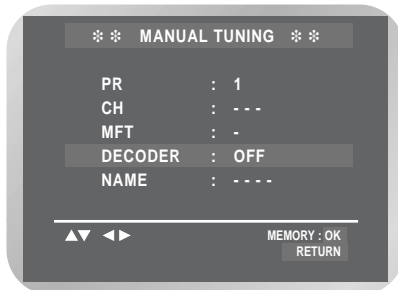


- 5 If necessary, press the **▲** or **▼** button to select **MFT**, then press the **◀** or **▶** button to adjust the picture.
If you wish to store the station displayed, press the **OK** button.
Repeat this procedure from step 3 onwards, until all the required stations have been stored.

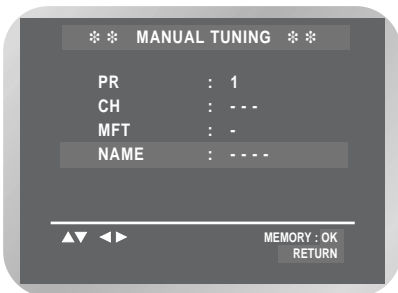


- 6** Press the ▲ or ▼ button to select **DECODER**.
Indicate whether you wish to use a decoder **ON** or not **OFF**.

* DVD-V6500



- 7** Press the ▲ or ▼ button to select **NAME**.
The station name is set automatically from the broadcast signal.
To change the programme's name, press the ► button. The first letter of the name flashes.



- Press the ▲ or ▼ button to select a letter, a number or a symbol.
- Press the ◀ or ▶ button to move to the previous or next letter.



Note

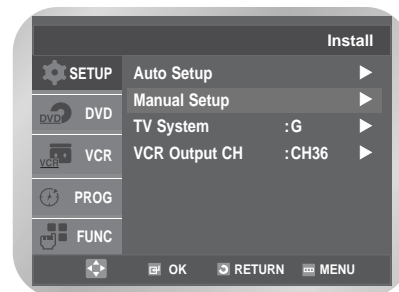
- If you do not wish to store the station displayed, press the ▲ or ▼ button to select **CH**, then press the ◀ or ▶ button to go on scanning the frequency band and display the next station.

Clearing a Preset Station

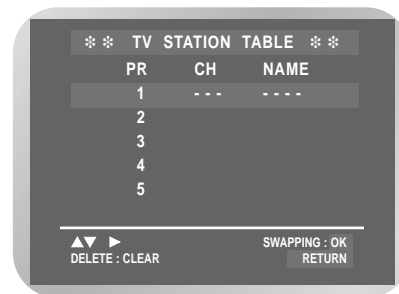
If you have stored a TV station:

- That you do not require
- At the wrong programme position you can cancel it.

- 1** Press the **MENU** button.
The **Setup** menu is displayed.
Press the **OK** or ► button.
Press the ▲ or ▼ button to select **Install**.
Press the **OK** or ► button.
The **Manual Setup** menu is displayed.



- 2** Press the **OK** or ► button.
The **TV STATION TABLE** menu is displayed.



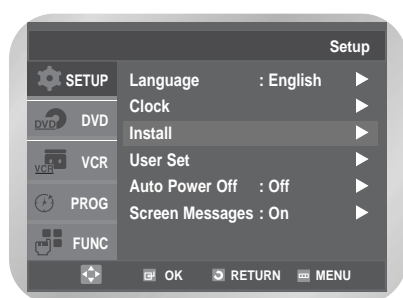
- 3** Press the ▲ or ▼ button to select required preset TV station.
Press the **CLEAR** button to delete.

- 4** Repeat the same procedure from step 4 onwards until all the required stations have been cleared.

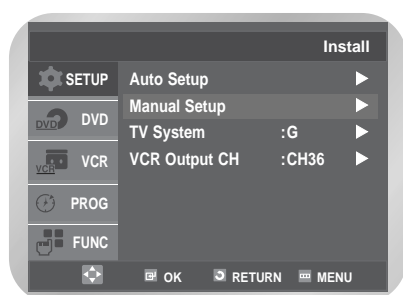
Changing the Preset Station Table

You can rearrange the station table and give different programme numbers to the stations listed according to your own preferences.

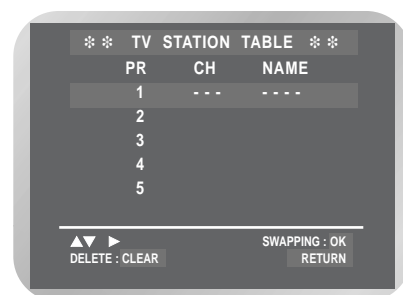
- 1 Press the **MENU** button.
The **Setup** menu is displayed.
Press the **OK** or **▶** button.
Press the **▲** or **▼** button to select **Install**.



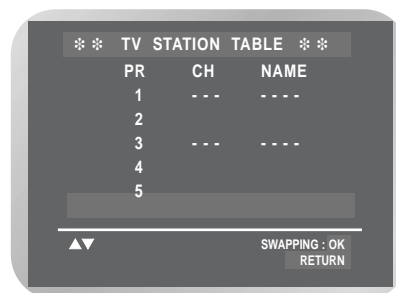
- 2 Press the **OK** or **▶** button.
The **Manual Setup** menu is displayed.



- 3 Press the **OK** or **▶** button.
The **TV STATION TABLE** menu is displayed.

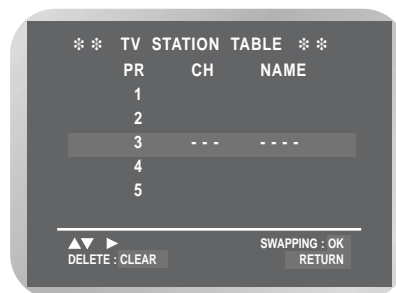


- 4 Press the **▲** or **▼** button to select required preset TV station.
The selected station is displayed at the same time on the television screen.
Press the **OK** button to change the programme number assigned to a station.



For example, To move a TV station in programme 1 to programme 3.

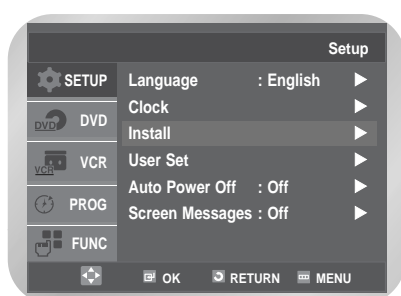
- 5 Press the **▲** or **▼** button to select required position.
Press the **OK** button to swap the position.



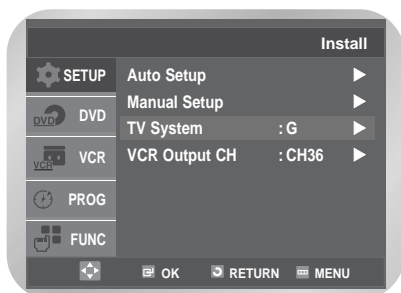
Selecting the RF OUT Sound Mode (B/G-G/K)

You can choose the sound mode (B/G or G/K) according to the TV set connected to your VCR.

- 1 Press the **MENU** button.
The **Setup** menu is displayed.
Press the **OK** or **▶** button.
Press the **▲** or **▼** button to select **Install**.



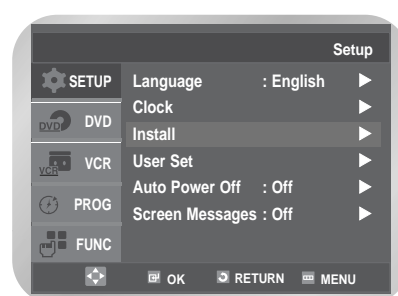
- 2 Press the **OK** or **▶** button.
Press the **▲** or **▼** button to select **TV System**.
Press the **OK** or **▶** button to select **G** or **K** and then press the **OK** button.



Setting the VCR Output Channel

Your DVD-VCR output channel may need to be changed if the pictures suffer from interference or if your TV cannot find the pictures.

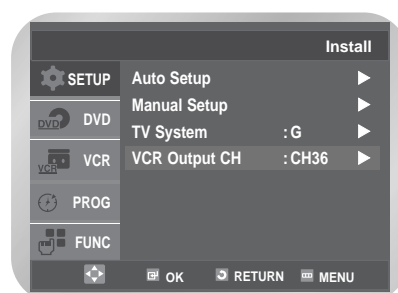
- 1 Press the **MENU** button.
The **Setup** menu is displayed.
Press the **OK** or **▶** button.
Press the **▲** or **▼** button to select **Install**.



- 2 Press the **OK** or **▶** button.
Press the **▲** or **▼** button to select **VCR Output CH**.
Press the **OK** or **▶** button to select the required output channel (CH21~CH69) by pressing the **OK** or **▶** buttons.

→ CH21 → ..CH36 → ..CH69

On completion, press **RETURN** to exit the menu.
Then tune your television again (see page 14).



VCR Functions

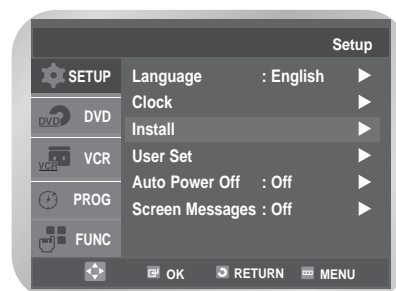
- *Selecting the Colour Mode* 23
- *NICAM* 24
- *Intelligent Picture Control* 25
- *ShowView Extend (DVD-V6500)* 26
- *Auto Power off* 26
- *Screen Messages* 27
- *Selecting the Cassette Type* 27
- *Repeat Play* 28
- *Selecting the Recording Speed* 28
- *Protecting a Recorded Cassette* 29
- *Recording a Programme Immediately* 29
- *Recording a Programme with Automatic Stop* 30
- *Using the ShowView Feature (DVD-V6500)* 31
- *Modifying ShowView Programming (DVD-V6500)* 32
- *Using the Timer Programming Feature* 33
- *Checking a Preset Recording* 35
- *Cancelling a Preset Recording* 36

Selecting the Colour Mode

Before recording or playing back a cassette, you can select the required system standard. Otherwise, the system automatically selects the reception standard when you select AUTO.

- When playing back a cassette, the standard is automatically selected by the DVD-VCR.
- When you playback an NTSC-recorded tape on this DVD-VCR make a setting on the colour system according to your TV. If your TV is a PAL system only TV, set NTPB. If your TV is multi system TV (NTSC 4.43 compatible), set NT4.43 and you can record NT4.43.

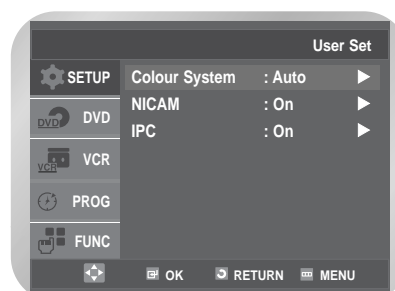
- 1 Press the **MENU** button.
The **Setup** menu is displayed.
Press the **OK** or **▶** button.
Press the **▲** or **▼** button to select **Install**.



- 2 Press the **OK** or **▶** button.
The **Colour System** menu is displayed.
Press the **OK** or **▶** button to select required colour system.

Auto → PAL → B/W

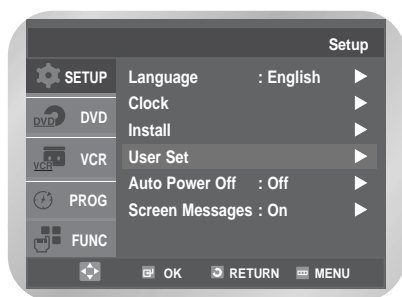
- **Auto** : When playing back a cassette, the system standard is automatically selected by the DVD-VCR.
- **B/W** : Black and White



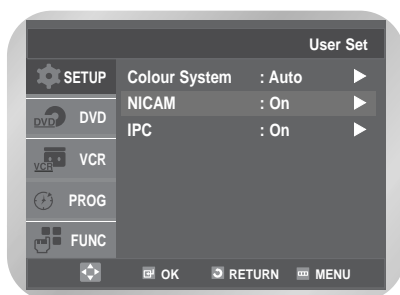
NICAM

NICAM programmes are divided into 3 types. NICAM Stereo, NICAM Mono and Bilingual (transmission in another language).
NICAM programmes are always accompanied by a standard mono sound broadcast and you can select the desired sound. Please refer to page 36.

- 1 Press the **MENU** button.
The **Setup** menu is displayed.
Press the **OK** or **▶** button.
Press the **▲** or **▼** button to select **User Set**.



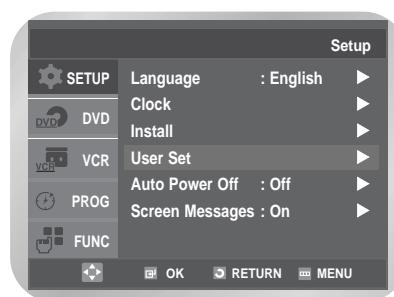
- 2 Press the **OK** or **▶** button.
Press the **▲** or **▼** button to select **NICAM**.
Press the **OK** or **▶** button to select **On** or **Off**.
 - **On** (for NICAM mode):
Normally set at this position
 - **Off** (for MONO mode):
Only set at this position to record the standard mono sound during a NICAM broadcast if the stereo sound is distorted due to inferior reception conditions.



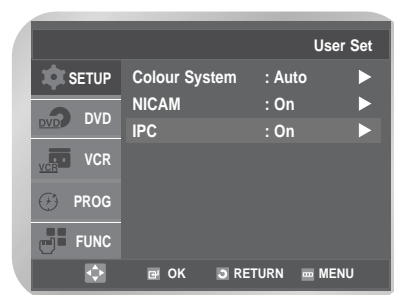
Intelligent Picture Control

This feature allows you to adjust the sharpness of the image automatically, according to your own preferences.

- 1 Press the **MENU** button.
The **Setup** menu is displayed.
Press the **OK** or **▶** button.
Press the **▲** or **▼** button to select **User Set**.



- 2 Press the **OK** or **▶** button.
Press the **▲** or **▼** button to select **IPC** (Intelligent Picture Control).
Press the **OK** or **▶** button to select **On** or **Off**.
 - **On** : The sharpness of the picture is adjusted automatically.
 - **Off** : The sharpness of the picture is adjusted manually.
 - You can select the modes simply by pressing the **IPC** button.

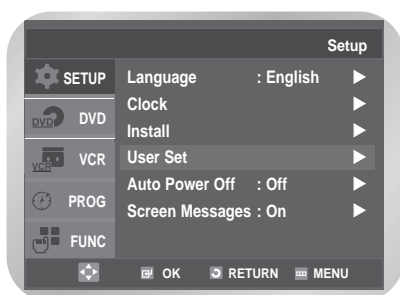


ShowView Extend (DVD-V6500)

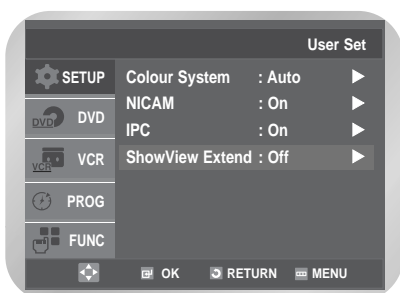
To prevent delays or over-runs the VCR has a function called **ShowView Extend** allowing you to extend the recording time by up to 60 minutes.

- Only use if **PDC** is not available or set to **Off**.
- ShowView

- 1 Press the **MENU** button.
The **Setup** menu is displayed.
Press the **OK** or **▶** button.
Press the **▲** or **▼** button to select **User Set**.



- 2 Press the **OK** or **▶** button.
Press the **▲** or **▼** button to select **ShowView Extend**.
Press the **OK** or **▶** button to select the required time by increments of 10 minutes.
Off → 10 → 20 → 30 → 40 → 50 → 60

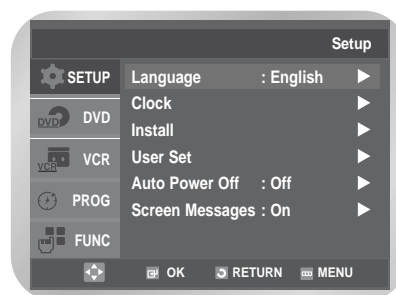


Note

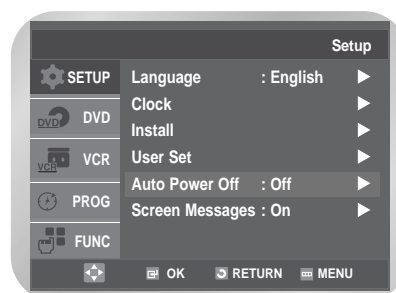
Auto Power off

This feature automatically turns off your DVD-VCR if no signal is received and you do not press any button for the selected time.

- 1 Press the **MENU** button.
The **Setup** menu is displayed.
Press the **OK** or **▶** button.



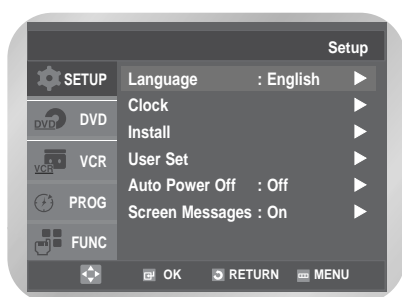
- 2 Press the **▲** or **▼** button to select **Auto Power Off**.
Press the **OK** or **▶** button to select the preset interval.
Off → 1 Hour → 2 Hour → 3 Hour



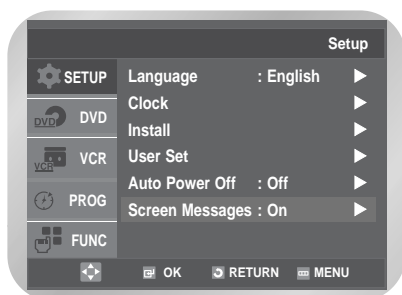
Screen Messages

Your DVD-VCR displays most information both on the DVD-VCR and the television.
You can choose to display or hide this information on the television screen (except for the search, programming menu and timer functions, which cannot be hidden).

- 1 Press the **MENU** button.
The **Setup** menu is displayed.
Press the **OK** or **▶** button.



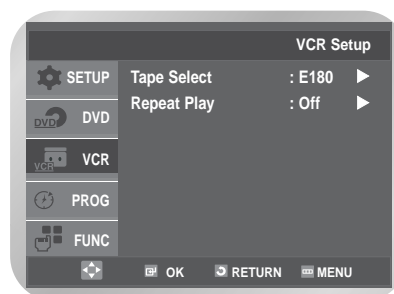
- 2 Press the **▲** or **▼** button to select **Screen Message**.
Press the **OK** or **▶** button to select **On** or **Off**.
 - **On** : Select to display on-screen information.
 - **Off** : Select to hide on-screen information.



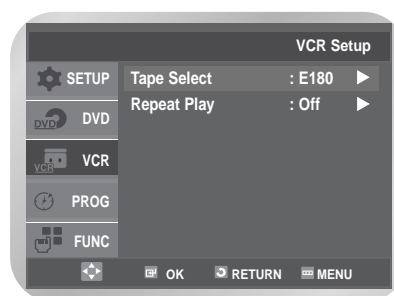
Selecting the Cassette Type

If you wish to use the tape counter to display the time remaining on a cassette, you must indicate the type of cassette inserted.

- 1 Press the **MENU** button.
Press the **▲** or **▼** button to select **VCR**.
The **VCR Setup** menu is displayed.



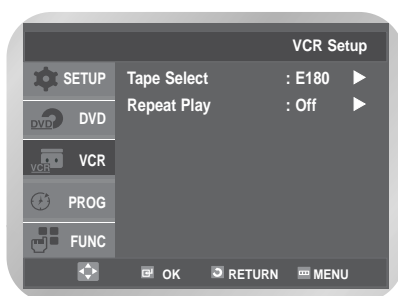
- 2 Press the **OK** or **▶** button.
The **Tape Select** is selected.
Press the **OK** or **▶** button to select the correct cassette length.
E180 → E240 → E260 → E300



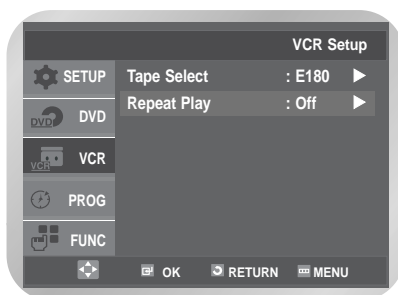
Repeat Play

You can set repeat play to repeat the tape continuously from beginning to end.

- 1 Press the **MENU** button.
Press the **▲** or **▼** button to select **VCR**.
The **VCR Setup** menu is displayed.



- 2 Press the **OK** or **▶** button.
Press the **▲** or **▼** button to select **Repeat Play**.
Press the **OK** or **▶** button to select **On** or **Off**.



Selecting the Recording Speed

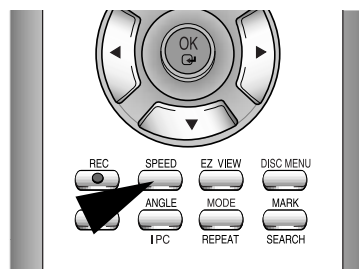
You can record a cassette at two different speeds:

- SP (Standard Play)
- LP (Long Play)

In Long Play modes:

- Each cassette lasts twice as long
- The recording is of a slightly lower quality

- 1 Press the **SPEED** button to select **SP** or **LP**.

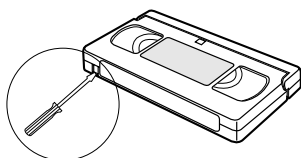


Type	Recording Time (in SP)
E180	180 mins. or 3 hours
E240	240 mins. or 4 hours
E260	260 mins. or 4 hours and 20 mins.
E300	300 mins. or 5 hours

Protecting a Recorded Cassette

Video cassettes have a safety tab to prevent accidental erasure. When this tab has been removed, you cannot record on the tape.

- 1 If you wish to protect a cassette, break off the tab using a small screwdriver.



- 2 To re-record over a protected cassette (safety tab broken), cover the hole with adhesive tape.

Recording a Programme Immediately

Before recording a programme, you must have preset the corresponding station (unless you are recording via an external video source). If you have not done so, refer to pages 17~18.

- 1 Switch on the television.
- 2 To monitor the programme being recorded, select the television channel reserved for use with your DVD-VCR (or the AV input if used).
- 3 Insert the cassette on which the programme is to be recorded, with the window visible and the safety tab intact or the opening covered with adhesive tape.
The DVD-VCR is switched on automatically.
- 4 Select the station to be recorded by pressing the **PROG** Δ or ∇ button or select the source (AV1, AV2, or AUX) by pressing the **INPUT SEL.** button for a satellite tuner or external video source. The station number is displayed and the programme can be seen on the television.
- 5 Select the recording speed by pressing the **SPEED** button as many times as required (refer to page 26).
- 6 Hold down the **REC** (●) button for a while to start recording.
The record indicator appears on the television and DVD-VCR display. An index is recorded on the tape (refer to page 37).
- 7 To stop recording, press the ■ button once.
 - If your DVD-VCR ejects the cassette when you start recording, check to make sure that the cassette's safety tab is intact or that the opening (created by a broken safety tab) is covered with adhesive tape.
 - If you reach the end of the tape while recording, the cassette rewinds automatically.

Recording a Programme with Automatic Stop

This function enables you to record up to nine hours (LP) of programmes. Your DVD-VCR stops automatically after the requested length of time.

VCR Functions

- 1 Switch on the television.
- 2 To monitor the programme being recorded, select the television channel reserved for use with your DVD-VCR (or the AV input if used).
- 3 Insert the cassette on which the programme is to be recorded, with the window visible and the safety tab intact or the opening covered with adhesive tape.
The DVD-VCR is switched on automatically
- 4 Select the station to be recorded by pressing the **PROG** \wedge or \vee button or select the source (AV1, AV2, or AUX) by pressing the **INPUT SEL.** button for a satellite tuner or external video source.
The station number is displayed and the programme can be seen on the television.
- 5 Select the recording speed by pressing the **SPEED** button as many times as required (refer to page 26).
- 6 Hold down the **REC** (●) button for a while to start recording.
The record indicator appears on the television screen and DVD-VCR display. An index is recorded on the tape (refer to page 37).

- 7 Press the **REC** (●) button several times to increase the recording time in:
 - 30-minute intervals up to four hours
 - 1-hour intervals up to nine hours
 The length is displayed on the television displays. The selected programme is recorded for the length of time requested. At the end of that time, the DVD-VCR stops recording automatically and power off.



- 8 If you wish to cancel the recording before the end, press the **STANDBY/ON** button.
 - If the end of the tape is reached while recording, the recording stops and power off.

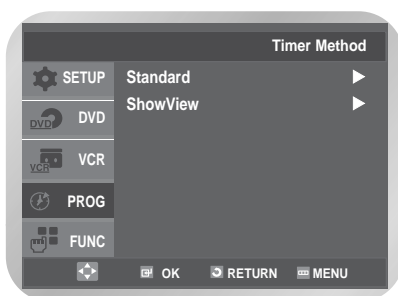
Using the ShowView Feature (DVD-V6500)

Before presetting your DVD-VCR:

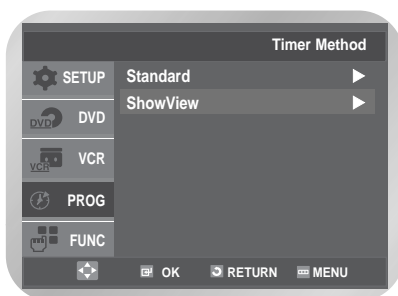
- Switch on both the television and your DVD-VCR
- Check that the date and time are correct
- Insert the cassette on which the programme is to be recorded (safety tab intact)

Up to six programmes can be preset.

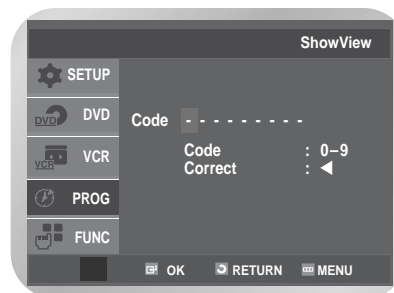
- 1 Press the **MENU** button.
Press the **▲** or **▼** button to select **PROG**.
The **Timer Method** menu is displayed.



- 2 Press the **OK** or **▶** button.
Press the **▲** or **▼** button to select **ShowView**.
• It can be displayed simply by pressing the **TIMER** button on the remote control.

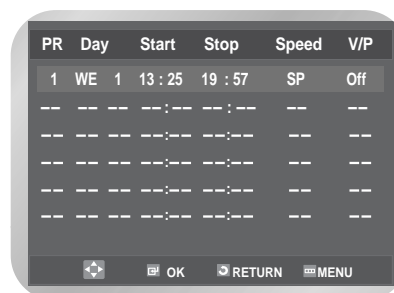


- 3 Press the **OK** or **▶** button.
A message is displayed to allow you to enter the **ShowView** code.
• If all six programmes have been set, the message **Timer is full** is displayed. Refer to page 34 if you wish to cancel a preset recording.



- 4 Press the numeric buttons to enter the code opposite the programme that you wish to record in your television magazine.
• If you wish to correct the **ShowView** code that you are entering:
- Press the **◀** button until the digit to be corrected is cleared.
- Enter the correct digit.

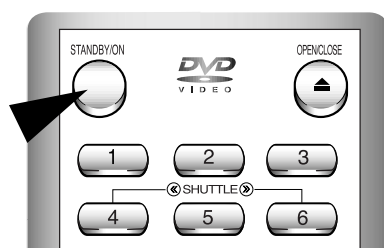
- 5 Press the **OK** button.
The information concerning the programme is displayed.
• When using the **ShowView** function for the first time with stored stations, the programme number flashes. This one time, you must enter the station number manually by pressing the **▲** or **▼** button.
For more details, please refer to page 30.



6 If the programme and times are correct, press the **OK** button.

7 Press the **STANDBY/ON** button to activate the timer.

- The numbers next to each TV programme listing are **ShowView** code numbers, which allow you to programme your videorecorder instantly with the remote control. Tap in the **ShowView** code for the programme you wish to record.
- Refer to page 33 if you wish to:
 - Check that your DVD-VCR has been programmed correctly
 - Cancel a preset recording



VCR Functions

ShowView is a trademark of Gemstar Development Corporation. The **ShowView** system is manufactured under licence from Gemstar Development Corporation.

Modifying ShowView Programming (DVD-V6500)

If you wish to correct the programme displayed or modify certain elements, such as the recording speed, you can do so before you press the **RETURN** button a second time to confirm.

If you wish to...	Then...
Select an input source (AV1, AV2 or AUX) other than the tuner	1 Press the ◀ or ▶ button to select PR . 2 Press the INPUT SEL. button to select AV1, AV2, or AUX. • The input source must be selected before changing any other value.
Record a programme every day (Monday to Sunday) at the same time	1 Press the ◀ or ▶ button to select Day . 2 Press the ▲ or ▼ button to select DLY (Daily).
Record a programme every week on the same day and at the same time	1 Press the ◀ or ▶ button to select Day . 2 Press the ▲ or ▼ button to select the required day. W-SU : Weekly Sunday W-MO : Weekly Monday W-TU : Weekly Tuesday W-WE : Weekly Wednesday W-TH : Weekly Thursday W-FR : Weekly Friday W-SA : Weekly Saturday
Extend the recording time	1 Press the ◀ or ▶ button to select the recording time. 2 Press the ▲ or ▼ button to set the time.
Select the recording speed	1 Press the ◀ or ▶ button to select Speed . 2 Press the ▲ or ▼ button to select the required speed. Auto → SP (Standard Play) → LP (Long Play)
Select the VPS/PDC recording	1 Press the ◀ or ▶ button to select V/P (VPS/PDC). 2 Press the ▲ or ▼ button to select On . • Do not select V/P unless you are sure the programme you wish to record is broadcast with VPS/PDC. If you do set V/P to On , then you must set up the start-time exactly according to the published TV schedule. Otherwise the timer recording won't take place.

Using the Timer Programming Feature

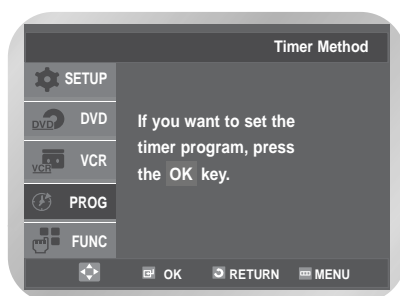
The Timer Programming feature allows you to preset the DVD-VCR to record a programme up to one month before that programme is to be broadcast. Up to six programmes can be preset.

- Before presetting a recording, check that the date and time are correct.

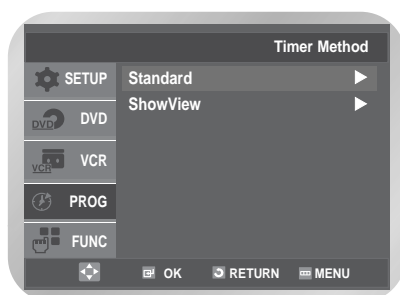
- 1 Press the **MENU** button.
Press the **▲** or **▼** button to select **PROG**.
The **Timer Method** menu is displayed.
Press the **OK** or **▶** button.
The **Standard** is selected.

- It can be displayed simply by pressing the **TIMER** button on the remote control.

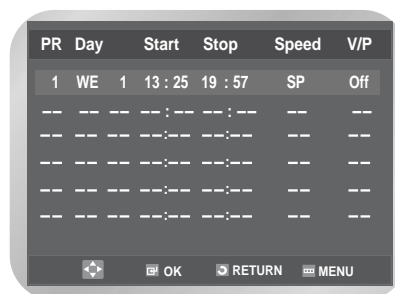
* DVD-V5500



* DVD-V6500

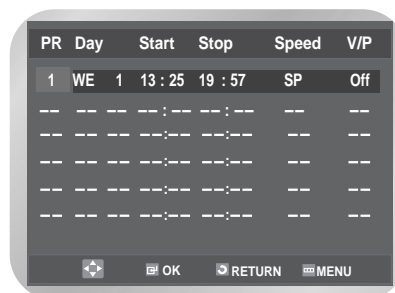


- 2 Press the **OK** or **▶** button again.
The timer programming menu is displayed.



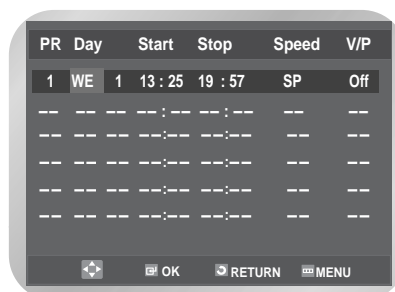
- 3 Press the **▶** button to select **PR**.
Press the **▲** or **▼** button to select the required station.

- Press the **INPUT SEL.** button to select an input source (AV1, AV2, or AUX) other than the tuner.

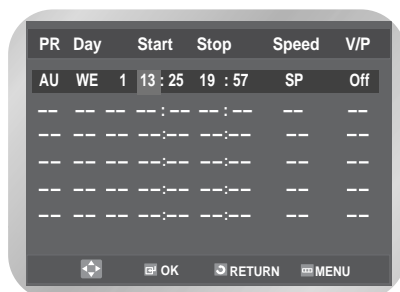


- 4 Press the **▶** button to select **Day**.
Press the **▲** or **▼** button to select the required day.

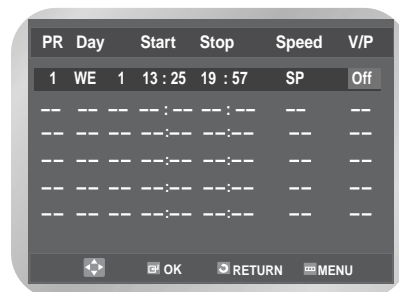
- **DLY** : Daily
- **W-SU** : Weekly Sunday
- **W-MO** : Weekly Monday
- **W-TU** : Weekly Tuesday
- **W-WE** : Weekly Wednesday
- **W-TH** : Weekly Thursday
- **W-FR** : Weekly Friday
- **W-SA** : Weekly Saturday



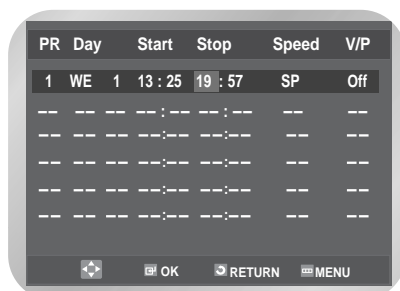
- 5** Press the ► button to select **Start**.
Press the ◀ or ▶ button to select the hour or minute.
Press the ▲ or ▼ button to set these.



- 8** Press the ► button to select **V/P** (VPS/PDC).
Press the ▲ or ▼ button to select **On** or **Off**.
When you have finished, press the **RETURN** button.

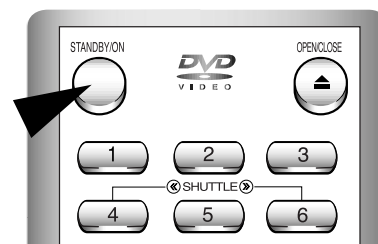


- 6** Press the ► button to select **Stop**.
Press the ◀ or ▶ button to select the hour or minute.
Press the ▲ or ▼ button to set these.

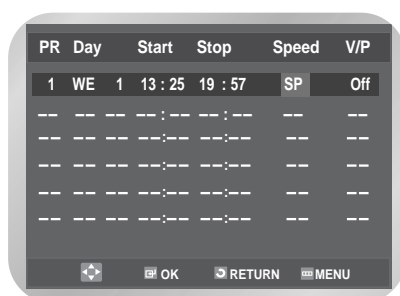


- 9** Press the **STANDBY/ON** button to activate the timer.

- **Auto Tape Speed Select** The DVD-VCR's "Auto Tape Speed Select" function compares the duration of the timer recording to the actual recording time remaining on the tape loaded. If there is insufficient tape to complete a timer recording in **Auto** mode, the DVD-VCR automatically switches to **LP** mode to record the whole programme.



- 7** Press the ► button to select **Speed**.
Press the ▲ or ▼ button to select the required recording speed.
• **Auto** → **SP** (Standard Play) → **LP** (Long Play)



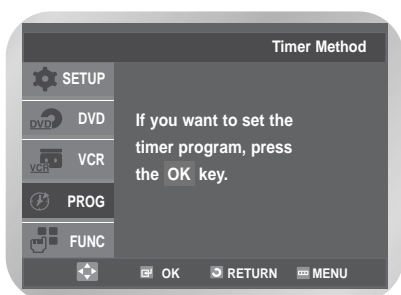
Checking a Preset Recording

You can check your preset recordings:

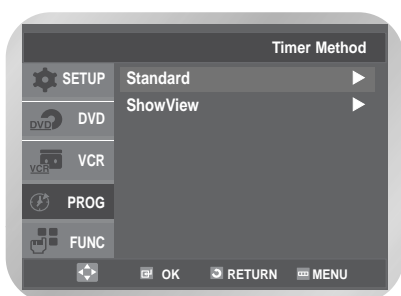
- When you have finished presetting the DVD-VCR
- If you have forgotten which programmes will be recorded

- 1 Press the **MENU** button.
Press the **▲** or **▼** button to select **PROG**.
The **Timer Method** menu is displayed.
Press the **OK** or **▶** button.
The **Standard** is selected.
 - It can be displayed simply by pressing the **TIMER** button on the remote control.

* DVD-V5500



* DVD-V6500



- 2 Press the **OK** or **▶** button again.
The list of preset recordings is displayed with the corresponding information.

PR	Day	Start	Stop	Speed	V/P
1	WE	1 13 : 25	19 : 57	SP	Off
---	---	---	---	---	---
---	---	---	---	---	---
---	---	---	---	---	---
---	---	---	---	---	---
---	---	---	---	---	---
---	---	---	---	---	---
---	---	---	---	---	---

- 3 To change any values, select the required programme by pressing the **▲** or **▼** button, then repeat steps 4 to 9 on page 31.

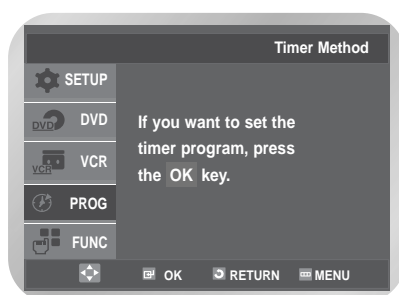
Cancelling a Preset Recording

You can cancel any programmes that are:

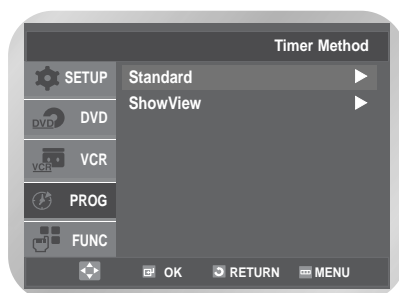
- Incorrect
- No longer required

- 1 Press the **MENU** button.
Press the **▲** or **▼** button to select **PROG**.
The **Timer Method** menu is displayed.
Press the **OK** or **▶** button.
The **Standard** is selected.
• It can be displayed simply by pressing the **TIMER** button on the remote control.

* DVD-V5500



* DVD-V6500



- 2 Press the **OK** or **▶** button again.
The list of preset recordings is displayed with the corresponding information.

PR	Day	Start	Stop	Speed	V/P
1	WE	1 13 : 25	19 : 57	SP	Off
---	---	---	---	---	---
---	---	---	---	---	---
---	---	---	---	---	---
---	---	---	---	---	---
---	---	---	---	---	---
---	---	---	---	---	---
---	---	---	---	---	---

- 3 Press the **▲** or **▼** button to select the programme to be cancelled.
Press the **CLEAR** button.
All the recording information is deleted and the broadcast will not be recorded.

PR	Day	Start	Stop	Speed	V/P
---	---	---	---	---	---
---	---	---	---	---	---
---	---	---	---	---	---
---	---	---	---	---	---
---	---	---	---	---	---
---	---	---	---	---	---
---	---	---	---	---	---
---	---	---	---	---	---

Playing BACK

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• <i>Adjusting Picture Alignment Manually</i>	37
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• <i>Recording from Another VCR or Camcorder</i> ..	42

Playing a Cassette

This function allows you to play back any pre-recorded cassette.

- 1 Switch on both the television and your DVD-VCR.
- 2 Insert the video cassette to be played. If the safety tab on the cassette is intact, press the ►II (play/pause) button. Otherwise, the cassette is played automatically.
 - When a cassette is loaded, the tape position is optimized automatically to reduce disturbance (Digital Auto Tracking). When playing a cassette, if the end of the tape is reached, the cassette is rewind automatically. NTSC tapes can be played back but cannot be recorded with this DVD-VCR.
- 3 Press the ■ (stop) button to stop the playback. Press the ▲ (eject) button to eject the playback.

Adjusting Picture Alignment Manually

This feature allows you to adjust the alignment manually to obtain the best possible picture.

When noise bars or streaks appear during playback, adjust alignment manually by pressing the **PROG** ▲ or ▼ button until the picture is clear and stable.

- ◆ The tracking bar appears.
- ◆ The image is adjusted.
- ◆ The tracking bar disappears when you release the button.

Selecting the Audio Output Mode

You can select the mode in which the sound is reproduced on the loudspeakers and AV outputs. The following options are available.

Press the **AUDIO** button on the remote control until the required option is displayed.

Option	Description
L	Used to listen to the sound on the left Hi-Fi channel.
R	Used to listen to the sound on the right Hi-Fi channel.
MONO	Used to listen to the sound on the normal mono channel.
L R	Used to listen to Hi-Fi stereo sound on the left and right channels. <ul style="list-style-type: none"> When playing back tapes recorded in Hi-Fi, the sound switches to Hi-Fi after five seconds of Mono.

Playing a Cassette in Slow Motion

You can play a cassette in slow motion.

- No sound is heard when playing back a cassette in slow motion.

- Press the :
 - ▶II button to start playing the cassette.
 - ▶II button again to make still mode.
 - ▶▶ button to start slow mode.
 - ◀◀ or ▶▶ button as many times as required to decrease or increase the speed respectively.
 - ▶II button twice to return to the normal speed.

- When playing back in slow motion, picture interference may occur. Press the **PROG** \wedge or \vee button to minimize this effect.
 - When you have been using the Slow Motion function for more than about two minutes, the DVD-VCR will automatically play to protect the:
 - Cassette
 - Video heads

Playing a Sequence Frame by Frame

You can

- Stop the cassette at a given frame (image)
- Advance one frame at a time
- No sound is heard when playing back frame by frame.

- Press the :
 - ▶II button to start playing the cassette.
 - ▶II button again to make still mode.
 - F.ADV** button to advance frame by frame.
 - ▶II button to return to normal playback.
 - Vertical stability: When playing back frame by frame, interference may be seen on the screen. Press the **PROG** \wedge or \vee button to minimize this effect.
 - Slowmotion

Playing a Sequence at Variable Speeds

You can vary the playback speed using the Shuttle function (up to nine times the normal speed).

Example: You wish to analyse a sportsperson's technique, movement by movement.

The Shuttle function is available on the remote control

- No sound is heard when playing a sequence at variable speeds.

- Press the :
 - ▶II button during playback.
 - SHUTTLE** (<<) button to play the cassette backwards.
 - SHUTTLE** (>>) button to play the cassette forwards.

- Each time you press the **SHUTTLE** button, the speed is changed as shown in the following illustration.

REVERSE PLAY X9	REVERSE PLAY X5	REVERSE PLAY X3	STILL	SLOW MOTION X1/10	SLOW MOTION X1/5	PLAY X3	PLAY X5	PLAY X9
-----------------------	-----------------------	-----------------------	-------	-------------------------	------------------------	------------	------------	------------

Searching for a Specific Sequence

Each time you record a cassette on this DVD-VCR, an "index" is automatically marked on the tape when recording starts.

The Search function allows you to fast-forward or rewind to a specific index and start playback from that point. Depending on the direction selected, the indexes are numbered as follows:

↓

etc.	Prev Seq.	Seq. being played	Next Seq.	etc.
	2	1	1	2

- This DVD-VCR uses a standard indexing system (VISS). As a result, it will recognize any indexes marked by other VCRs using the same system and vice versa.

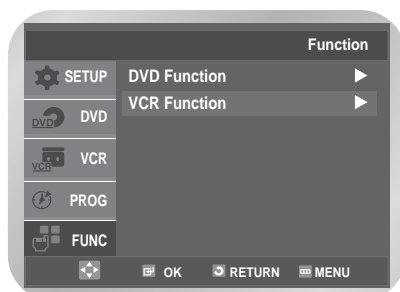
Go To [0:00:00] Stop

Use this feature when you want to search for the 0:00:00 counter position on a cassette.

Press the **CLEAR** button at the point on the tape where you want to set the counter to 0:00:00.

The VCR will rewind or fast forward, searching for the 0:00:00 counter position, and then automatically stop at that position.

- 1 Press the **MENU** button.
Press the **▲** or **▼** button to select **FUNC**.
The **Function** menu is displayed.
Press the **OK** or **▶** button.
Press the **▲** or **▼** button to select **VCR Function**.



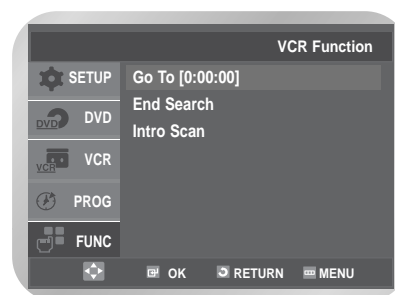
2

Press the **OK** or **▶** button.

The **VCR Function** menu is displayed with the **Go To [0:00:00]** selected.

Press the **OK** or **▶** button again.

- It can be displayed simply by pressing the **SEARCH** button.



End Search

Use this feature when you want to search for a blank position to record a program on a cassette.

The VCR will fast forward, searching for a blank position, and then automatically stop at that position.

If the VCR reaches the end of the tape during end search, the tape will be ejected.

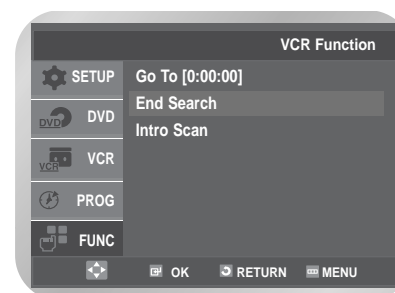
1

Press the **SEARCH** button.

The **VCR Function** menu is displayed.

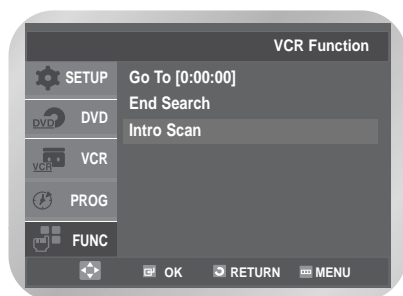
Press the **▲** or **▼** button to select **End Search**.

Press the **OK** or **▶** button.

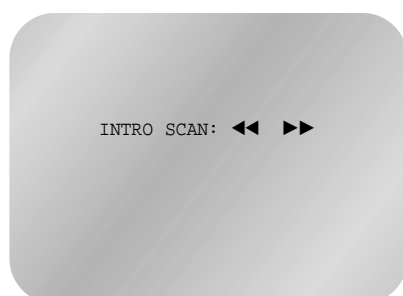


Intro Scan

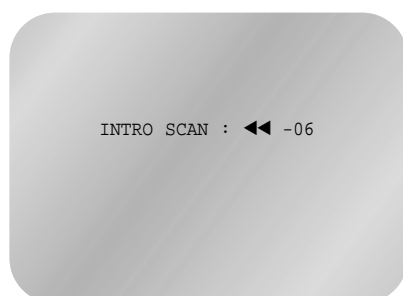
- 1 Press the **SEARCH** button.
The **VCR Function** menu is displayed.
Press the **▲** or **▼** button to select **Intro Scan**.
Press the **OK** or **▶** button.



- 2 Press the **◀◀** or **▶▶** button depending on the direction where your desired programme is located.



- 3 When an Index mark is found the DVD-VCR will playback the tape for 5 seconds, after which it will continue searching for the next Index mark.

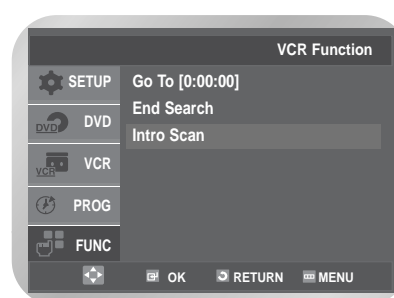


- 4 If you want to watch the tape from a particular Index, press the **▶||** button.

Index Skip Search

This feature will enable you to fast forward/rewind to a specific point on a tape: e.g. if you have recorded 3 different programmes on a tape and you have rewound the tape to the beginning, by using this feature you can go directly to the start of programme 2 simply by pressing the **SEARCH** button.

- 1 Press the **SEARCH** button.
The **VCR Function** menu is displayed.
Press the **▲** or **▼** button to select **Intro Scan**.
Press the **OK** or **▶** button.



- 2 Press the **◀◀** or **▶▶** button twice more.
This will take you directly to the start of the desired programme is located.

- 3 These Index searches can be made forwards (press the **▶▶** button) or backwards (press the **◀◀** button).
(◀◀ -20 . . 0 . . +20 ▶▶)

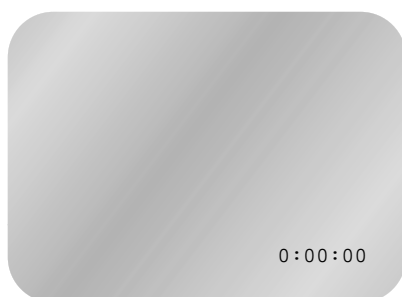
To cancel an Index search simply press the **▶||** or **■** button.

Using the Tape Counter

The tape counter:

- Indicates the elapsed time in the play and record modes (hours, minutes and seconds)
- Is reset when a cassette is inserted in the DVD-VCR
- Allows you to find the beginning of a sequence easily
- If the remaining time is to be calculated correctly, you must indicate the type of cassette being used.

- 1 Insert a cassette in your DVD-VCR.
To set the tape counter to zero at the beginning of a sequence:
 - Press the **INFO.** button twice to display the counter
 - Press the **CLEAR** button when you want to set the tape counter to zero



- 2 When you are ready,
 - Start playback or Recording.
 - Press the **■** button.
 - To fast-forward or rewind to the sequence at which the counter was set to zero, press the **◀◀** or **▶▶** button.
 - Some DVD-VCR information, such as the counter, can be displayed on the television screen (unless you have deactivated the **Screen Messages** mode; refer to page 26).

Press the **INFO.** button:

 - Once to display the current function, programme number, recording speed, date, time and counter
 - Twice to display the counter only
 - Three times to display the time remaining on the cassette
 - Four times to clear the display

Connecting an RCA Audio/Video Input Cable

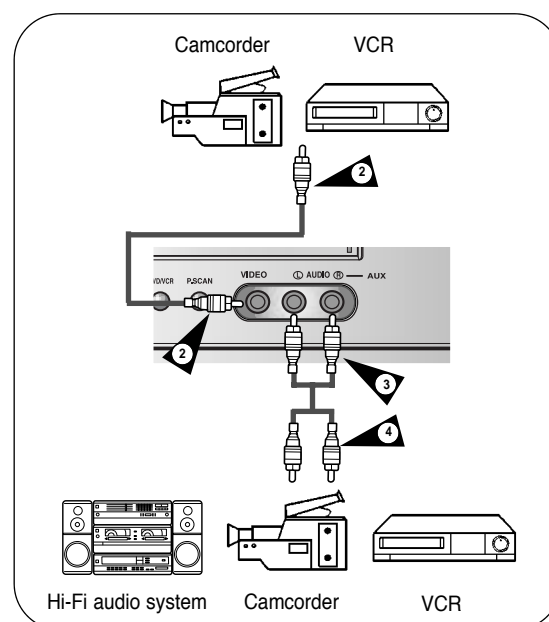
You can connect other audio/video equipment to your DVD-VCR using audio/video cables if the appropriate outputs are available on the equipment chosen.

Examples :

- You wish to copy a video cassette with the help of a second VCR.
- You wish to play back and/or copy pictures taken with a camcorder

- Make sure that both the television and the DVD-VCR are switched off before connecting the cables.

- 1 Connect one end of the RCA video cable into the **VIDEO** input socket on the front of the DVD-VCR.
- 2 Plug the other end of the video cable into the appropriate output connector on the other system (VCR or camcorder).
- 3 Connect one end of the RCA audio cable supplied into the **AUDIO** input sockets on the front of the DVD-VCR.
 - Take care to respect the colour coding of the left and right channels.
- 4 Plug the other end of the audio cable into the appropriate output connectors on the other system (VCR, camcorder or Hi-Fi audio system).



Using the Assemble Edit Function

This function allows you to start a new recording at a specific position on the cassette while maintaining a very smooth scene change.

- 1 Insert the cassette to be edited in your DVD-VCR.
- 2 Press the ►II button to start playback.
- 3 When you reach the position from which you wish to start the new recording, press the ►II button.
- 4 Press the **F.ADV/STEP** button as often as necessary to advance frame by frame, until the exact recording position is located.
- 5 While the DVD-VCR is in still mode, hold down the **REC (●)** button for a while to activate the assemble edit function.
- 6 Select the source from which you wish to record by pressing:
 - The **PROG** ▲ or ▼ button for television channels
 - The **INPUT SEL.** button for the AV1, AV2 or AUX input source.
- 7 Press the ►II button to start recording. When you have finished recording, press the ■ button.

Recording from Another VCR or Camcorder

You can copy a cassette to your DVD-VCR from another video source, such as another VCR or a camcorder.

- It is an infringement of copyright laws to copy prerecorded cassettes or to re-record them in any form without the permission of the owners of the corresponding copyright.

- 1 Connect the DVD-VCR, from which the cassette is to be copied, to the appropriate SCART audio and video input connectors on the rear of your DVD-VCR, as indicated on page 11.
- 2 Insert a blank cassette in your DVD-VCR.
- 3 Insert the pre-recorded cassette in the other video source (VCR or camcorder).
- 4 Press the **INPUT SEL.** button to select the appropriate input on your DVD-VCR:
 - AV1, AV2 for the SCART input
 - AUX for the RCA input
- 5 Start playing back the cassette to be copied.
- 6 Hold down the **REC (●)** button for a while to start recording on your DVD-VCR.
- 7 When you have finished recording, press the ■ button on both VCR and DVD-VCR.
 - If you wish to view the cassette being copied, your DVD-VCR must be connected as usual to the television (refer to page 11 for further details).

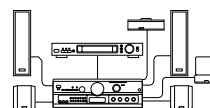
DVD Functions

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- **DivX/MPEG4 Playback (DVD-V6500)** 66

Choosing a Connection

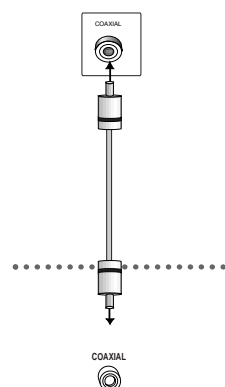
The following show examples of connections commonly used to connect the DVD -VCR player with a TV and other components. It is only available for DVD. The VCR out can not watch by this connection.

Connection to an Audio System

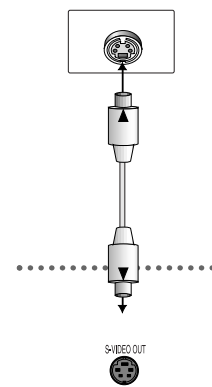


Dolby Digital Decoder
Digital Audio Input Jack

Connection to a Television



Digital Audio out Jack



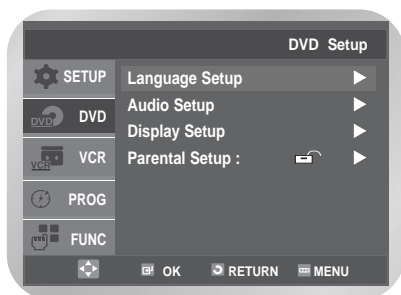
S-Video Jack

Setting Up the Language Features

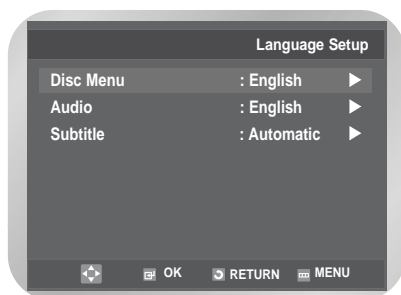
If you set disc menu, audio and subtitle language in advance, they will come up automatically every time you watch a movie.

Using the Disc Menu Language

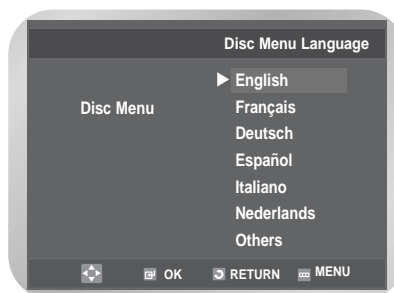
- 1 Press the **MENU** button in the stop mode.
Press the **▲** or **▼** button to select **DVD**.
The **DVD Setup** menu is displayed.
Press the **OK** or **▶** button.
The **Language Setup** is selected.



- 2 Press the **OK** or **▶** button again.
Press the **▲** or **▼** button to select **Disc Menu**.

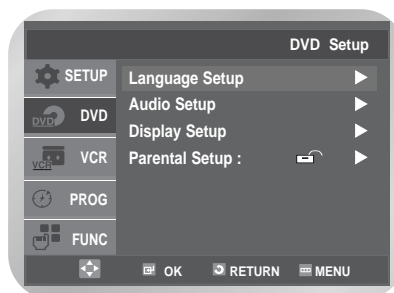


- 3 Press the **OK** or **▶** button.
Press the **▲** or **▼** button to select the required language.
• Select **Others** if the language you want is not listed

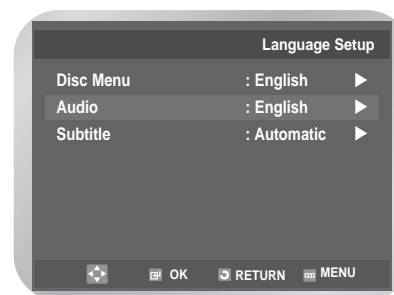


Using the Audio Language

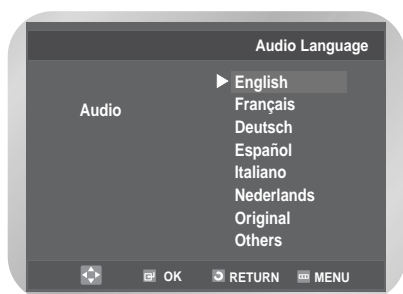
- 1 Press the **MENU** button in the stop mode.
Press the **▲** or **▼** button to select **DVD**.
The **DVD Setup** menu is displayed.
Press the **OK** or **▶** button.
The **Language Setup** is selected.



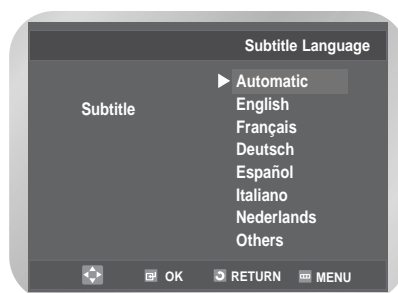
- 2 Press the **OK** or **▶** button again.
Press the **▲** or **▼** button to select **Audio**.



- 3** Press the **OK** or **▶** button.
Press the **▲** or **▼** button to select the required language.
- Select **Original** if you want the default soundtrack language to be the original language the disc is recorded in.
 - Select **Others** if the language you want is not listed.

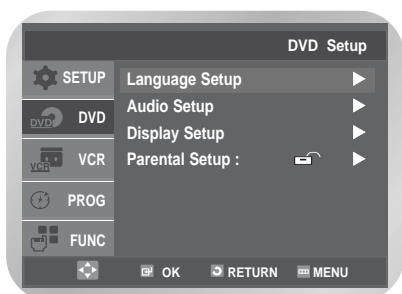


- 3** Press the **OK** or **▶** button.
Press the **▲** or **▼** button to select the required language.
Press the **OK** button.
- Select **Automatic** if you want the subtitle language to be the same as the language selected as the audio preference.
 - Select **Others** if the language you want is not listed. Some discs may not contain the language you select as your initial language; in that case the disc will use its original language setting.

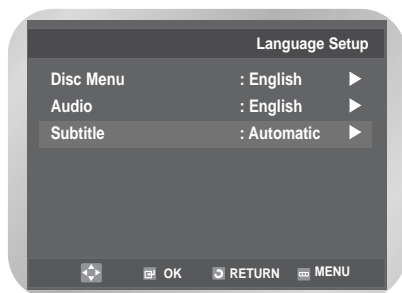


Using the Subtitle Language

- 1** Press the **MENU** button in the stop mode.
Press the **▲** or **▼** button to select **DVD**.
The **DVD Setup** menu is displayed.
Press the **OK** or **▶** button.
The **Language Setup** is selected.

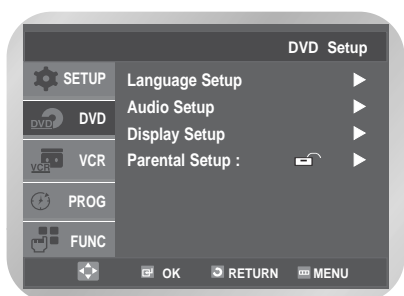


- 2** Press the **OK** or **▶** button again.
Press the **▲** or **▼** button to select **Subtitle**.

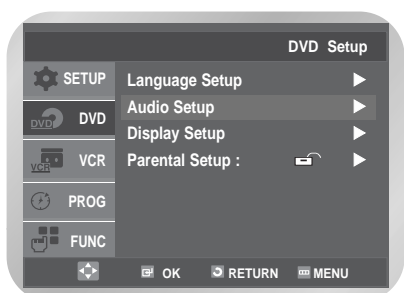


Setting Up the Audio Options

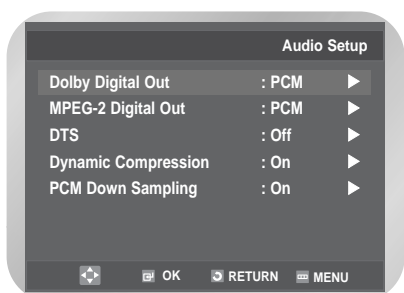
- 1 Press the **MENU** button in the stop mode.
Press the **▲** or **▼** button to select **DVD**.
The **DVD Setup** menu is displayed.



- 2 Press the **OK** or **▶** button.
Press the **▲** or **▼** button to select **Audio Setup**.



- 3 Press the **OK** or **▶** button.
The **Dolby Digital Out** menu is displayed.



- 4 Press the **▲** or **▼** button to select the required item.

- 5 Press the **OK** or **▶** button to select the required option.

Dolby Digital Out : PCM / Bitstream
MPEG-2 Digital Out : PCM / Bitstream
DTS : Off / On
Dynamic Compression: Off / On
PCM Down Sampling : Off / On

Dolby Digital Out

- **PCM** : Converts to PCM (2CH) audio.
Select PCM when using the Analog Audio Outputs.
- **Bitstream** : Converts to Dolby Digital Bitstream (5.1CH).
Select Bitstream when using the Digital Audio Output.



Be sure to select the correct Digital Output or no audio will be heard.

MPEG-2 Digital Out

- **PCM** : Converts to PCM (2CH) audio.
Select PCM when using the Analog Audio Outputs.
- **Bitstream** : Converts to MPEG-2 Digital Bitstream (5.1CH or 7.1CH). Select Bitstream when using the Digital Audio Output.

DTS

- **Off** : Doesn't output digital signal.
- **On** : Outputs DTS Bitstream via digital output only. Select DTS when connecting to a DTS Decoder.

Dynamic Compression

- **Off** : To select dynamic compression.
- **On** : To select the standard range.

PCM Down Sampling

- **Off** : Select this when the amplifier connected to the player is not 96KHz compatible. In this case, the 96KHz signals will be down converted to 48KHz.
- **On** : Select this when the amplifier connected to the player is 96KHz compatible. In this case, all signals will be output without any changes.



■ How to make the **DVD** menu disappear or return to menu screen during set up; Press **RETURN** or **◀** button.

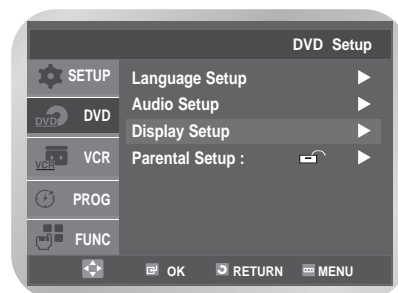
- Manufactured under license from Dolby Laboratories. "Dolby" and the double-D symbol are trademarks of Dolby Laboratories.
- "DTS" and "DTS Digital Out" are trademarks of Digital Theater Systems, Inc.

Setting Up the Display Options

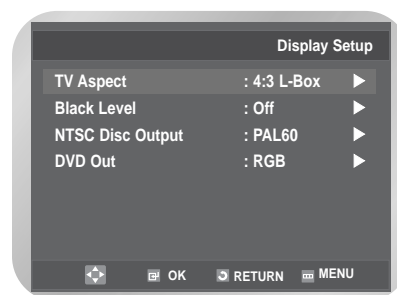
- 1 Press the **MENU** button in the stop mode. Press the **▲** or **▼** button to select **DVD**. The **DVD Setup** menu is displayed.



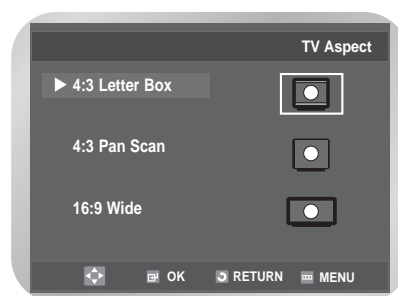
- 2 Press the **OK** or **▶** button. Press the **▲** or **▼** button to select **Display Setup**.



- 3 Press the **OK** or **▶** button. Press the **▲** or **▼** button to select **TV Aspect**.



- 4 Press the **OK** or **▶** button again. Press the **▲** or **▼** button to select the required item.



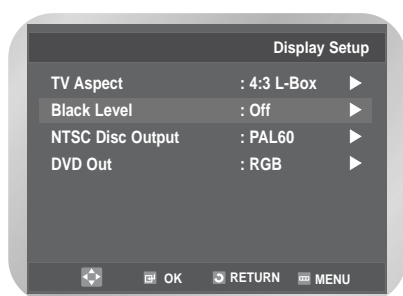
TV Aspect

Depending on the type of television you have, you may want to adjust the screen setting (aspect ratio).

- **4:3 Letter Box** :
Select when you want to see the total 16:9 ratio screen DVD supplies, even though you have a TV with a 4:3 ratio screen. Black bars will appear at the top and bottom of the screen.
- **4:3 Pan Scan** :
Select this for conventional size TVs when you want to see the central portion of the 16:9 screen. (Extreme left and right side of movie picture will be cut off.)
- **16:9 Wide** :
You can view the full 16:9 picture on your widescreen TV.

5

Press the **OK** or **▶** button.
The **Display Setup** menu is displayed again.
Press the **▲** or **▼** button to select **Black Level**.



6

Press the **OK** or **▶** button to select the required option.

Black Level : Off / On

NTSC Disc Output : NTSC / PAL60

DVD Out : RGB / S-Video / Video

Black Level

Adjusts the brightness of the screen. (**On/Off**)

NTSC Disc Output

NTSC if the screen only has one NTSC-video entrance. If this is not the case, you can choose to leave **PAL60** as is.

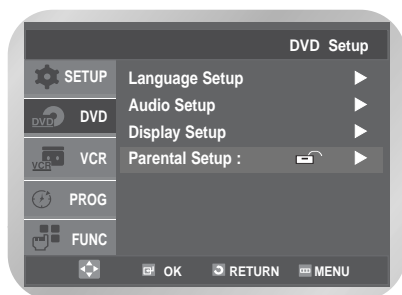
DVD Out

- **RGB** :
Sends RGB signal from the AV JACK (SCART terminal).
- **S-Video** :
Select this for conventional size TVs when you want to see the central portion of the 16:9 screen. (Extreme left and right side of movie picture will be cut off.)
- **Video** :
You can view the full 16:9 picture on your widescreen TV.

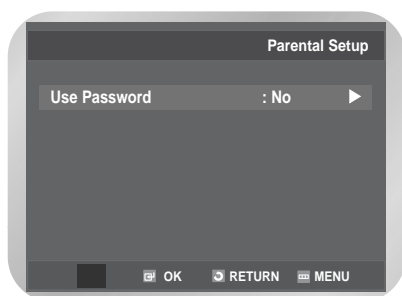
Setting Up the Parental Control

The Parental Control function works in conjunction with DVDs that have been assigned a rating - which helps you control the types of DVDs that your family watches. There are up to 8 rating levels on a disc.

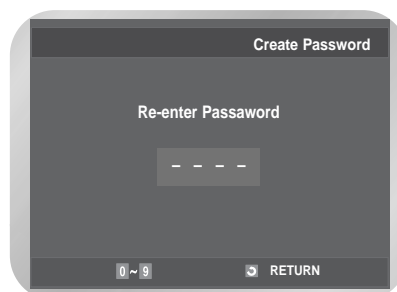
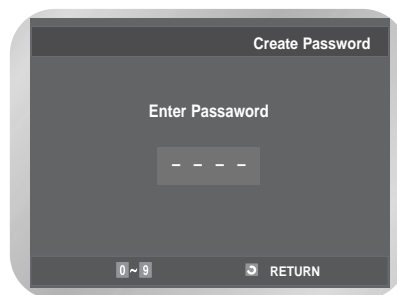
- 1 Press the **MENU** button in the stop mode. Press the **▲** or **▼** button to select **DVD**. The **DVD Setup** menu is displayed. Press the **OK** or **▶** button. Press the **▲** or **▼** button to select **Parental Setup**.



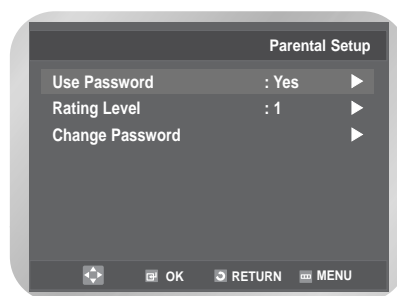
- 2 Press the **OK** or **▶** button. The **Use Password** menu is displayed.



- 3 Press the **OK** or **▶** button again if you want to use a password. The **Enter Password** menu is displayed. Enter your password by pressing the numeric buttons. The **Re-enter Password** is displayed to confirm the password.

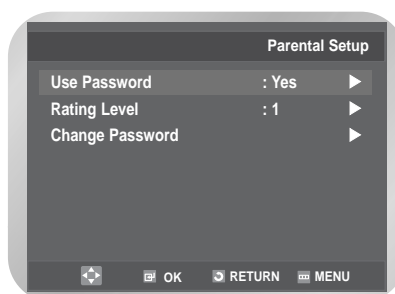
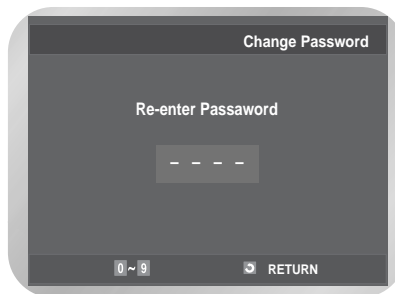
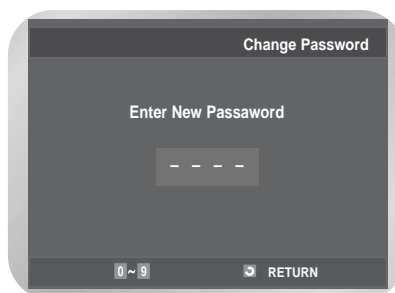
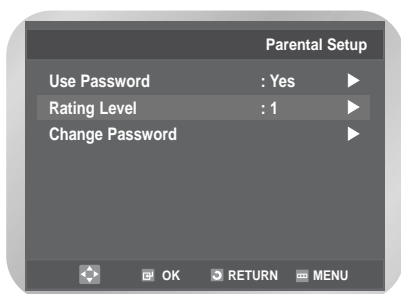


- 4 Enter your password again. The **Use Password** is set to **Yes** and the **Parental Setup** menu is displayed.



Setting up the Rating Level

- 5** Press the ▲ or ▼ button to select **Rating Level**.
 Press the **OK** or ► button.
 Press the ▲ or ▼ button to select the required level (e.g. **Level 6**).
 Press the **OK** or ► button.
- Discs that contain Level 7 will now not play.



Changing the Password

- 6** Press the ▲ or ▼ button to select **Change Password**.
 Press the **OK** or ► button.
 The **Enter New Password** is displayed.
 Enter your password by pressing the numeric buttons.
 The **Re-enter Password** is displayed to confirm the password.
 Enter your password again.
 The **Use Password** is set to **Yes** and the **Parental Setup** menu is displayed.
- How to make the **DVD** menu disappear or return to menu screen during set up;
 Press the **RETURN** or ◀ button.
 - If you have forgotten your password, refer to **Forget Password** in the **Troubleshooting Guide**.

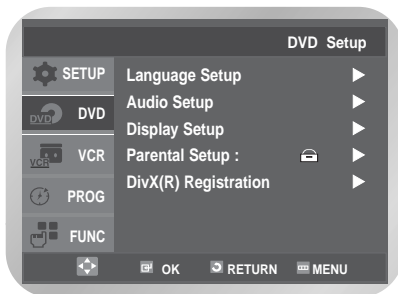
DivX(R) Registration (DVD-V6500)

DivX, DivX Certified, and associated logos are trademarks of DivXNetworks, Inc and are used under license.

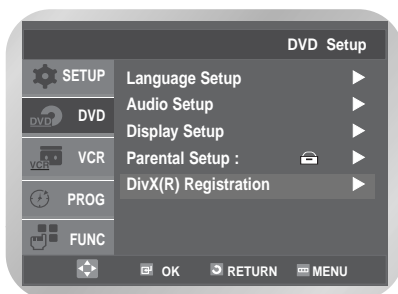


Please use your registration code to register this player with the DivX(R) Video On Demand service. This will allow you to rent and purchase videos using the DivX(R) Video On Demand format. To learn more go to www.divx.com/vod.

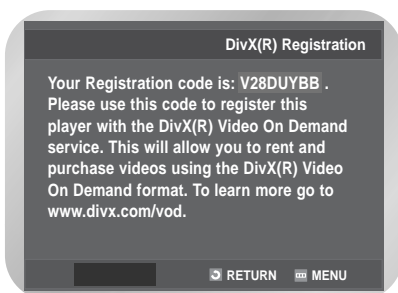
- 1 Press the **MENU** button in the stop mode. Press the **▲** or **▼** button to select **DVD**. The **DVD Setup** menu is displayed.



- 2 Press the **OK** or **▶** button. Press the **▲** or **▼** button to select **DivX(R) Registration**.



- 3 Press the **OK** or **▶** button. A message is displayed.



Firmware Upgrade

Please read the below information before update procedure.

- 1 The following events may interrupt the update procedure and **may result in permanent damage to DVD+VCR Combo**.

- Unplugging the power cord.
- Power Outage.
- Dirt or Scratch in the discs.
- Open a tray door during processing.

- 2 Samsung DVD+VCR Combo player with DivX Playback can only support English Subtitle. If you have any question or any problem, please feel free to contact your nearest SAMSUNG Service Center and agency.

Using the Assemble Edit Function

This function allows you to start a new recording at a specific position on the cassette while maintaining a very smooth scene change.

- 1 Insert the cassette to be edited in your DVD-VCR.
- 2 Press the ►II button to start playback.
- 3 When you reach the position from which you wish to start the new recording, press the ►II button.
- 4 Press the **F.ADV/STEP** button as often as necessary to advance frame by frame, until the exact recording position is located.
- 5 While the DVD-VCR is in still mode, hold down the **REC (●)** button for a while to activate the assemble edit function.
- 6 Select the source from which you wish to record by pressing:
 - The **PROG** ▲ or ▼ button for television channels
 - The **INPUT SEL.** button for the AV1, AV2 or AUX input source.
- 7 Press the ►II button to start recording. When you have finished recording, press the ■ button.

Recording from Another VCR or Camcorder

You can copy a cassette to your DVD-VCR from another video source, such as another VCR or a camcorder.

- It is an infringement of copyright laws to copy prerecorded cassettes or to re-record them in any form without the permission of the owners of the corresponding copyright.

- 1 Connect the DVD-VCR, from which the cassette is to be copied, to the appropriate SCART audio and video input connectors on the rear of your DVD-VCR, as indicated on page 11.
- 2 Insert a blank cassette in your DVD-VCR.
- 3 Insert the pre-recorded cassette in the other video source (VCR or camcorder).
- 4 Press the **INPUT SEL.** button to select the appropriate input on your DVD-VCR:
 - AV1, AV2 for the SCART input
 - AUX for the RCA input
- 5 Start playing back the cassette to be copied.
- 6 Hold down the **REC (●)** button for a while to start recording on your DVD-VCR.
- 7 When you have finished recording, press the ■ button on both VCR and DVD-VCR.
 - If you wish to view the cassette being copied, your DVD-VCR must be connected as usual to the television (refer to page 11 for further details).

- 5** After update is completed, you have to power off the unit and eject the update disc by using the **OPEN/CLOSE** button once the unit turns on.

- 6** Firmware update is ended. Turn on your player and enjoy a DivX movie.

Code Ver : XXXXXXXXX
Servo Ver : XXXXXXXXX

- In order to check new version like the below, press the **INFO.** button after opening a tray.



Note

- The display can be changed depend on its Version and without any notice.

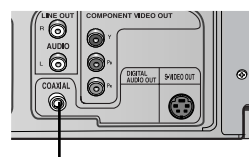
AV Receiver Connections

To take full advantage of the movie theater experience that DVD offers, you may want to connect your DVD-VCR to a complete Surround Sound system, including an A/V Receiver and six Surround Sound speakers. If your A/V receiver is equipped with a Dolby Digital Decoder, you have the option to bypass the DVD-VCR's built-in Dolby Digital Decoder. Use the Digital Audio Out connection below.

1 Digital Audio Out

Connect a digital coaxial cable from the Digital Audio Out jacks on the panel of the DVD-VCR to their corresponding Digital Audio Input jacks on your A/V Receiver:

- Coaxial
- Use whichever connection is available on your A/V Receiver.



To Digital Audio Input of an A/V Receiver with a Dolby Digital Decoder

Special Playback Features

During DVD/CD playback you can select from the following special playback options. To resume normal playback, press the ►|| button.

Still

Press the ►|| button during playback.

- The picture will still and the audio will mute.
- To resume playback, press the ►|| button.
- If the player is left in still mode for 5 minutes, it will stop automatically.

Frame Advance (Step)

While in playback mode, press the **F.ADV/STEP** button on the remote control to advance one frame at a time.

- Audio is muted during frame advance mode.
- Press the ►|| button to resume normal playback.



■ Frame Advance operates only in the forward direction.

DVD Functions

Skip Forward/Back

While a CD or DVD disc is in play mode, press the ◀◀ or ▶▶ button to jump forward and backward through disc chapters/tracks.

- Skip Forward (▶▶) will jump to the next chapter/track.
- Skip Back (◀◀) will jump to the beginning of the current chapter/track.
- Press the ◀◀ button again to jump to the beginning of the previous chapter/track.

Search Forward/Back

While a disc is in play mode, press and hold the ◀◀ or ▶▶ button to visually search forward/backward at 2X - 4X - 8X - 16X - 32X - 128X speed. Press the ►|| button to resume normal speed.

Slow Motion

During playback, press the ►|| button to slow the image. Then press the ▶▶ button to play in slow motion at variable speeds.

- Each press increases the slow motion speed playback to 1/8, 1/4 or 1/2 normal speed.
- Audio is muted during slow motion playback.

Stop/Resume

- Press the ■ button once to stop playback. To resume the DVD/CD from the point where the disc stopped, press the ►|| button.
- Press the ■ button twice to completely stop playback. The next time you press the ►|| button, the disc will start over from the beginning.

Title/Chapter/Time Selection

To view the current Title, Chapter/Track, and counter position, press the **INFO.** button during DVD playback. The Display screen can also be used to quickly choose a title, chapter/track, or playing time.

1 View the Display

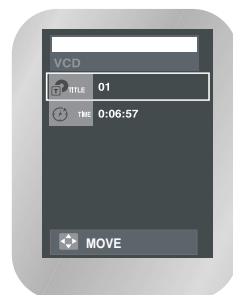
During DVD/CD playback, press the **INFO.** button.

- To make the screen disappear, press the **INFO.** button again.

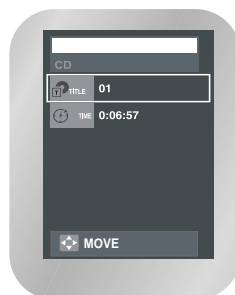
DVD



VCD



CD



2 Select Title

Press the **▲/▼**, **◀/▶** buttons to select Title, then press the **OK** button to change among all available titles on the disc.

3 Select Chapter or Track

Press the **▲/▼**, **◀/▶** buttons to select Chapter or Track, then press the **OK** button to change among all available chapters or tracks on the disc.

4 Select Counter Position

Press the **▲/▼/◀/▶** buttons to select the counter position indicator, then use the numeric buttons (0-9) to select the desired counter position in the format HH:MM:SS (H = Hours, M = Minutes, S = Seconds).

Press the **OK** button to select the desired counter position.

5 Select 3D Sound

The 3D Sound function is a sound enhancement mode that lets you enjoy virtual surround sound with only two speakers.



To access the desired title when there is more than one in the disc.

For example, if there is more than one movie on a DVD, each movie will be identified.



Most of DVD discs are recorded in chapters so that you can quickly find a specific passage.



Allows playback of the film from a desired time.

You must ok the starting time as a reference.



Refers to the language of the film soundtrack. In the example, the soundtrack is played in English 5.1CH. A DVD disc can have up to eight different soundtracks.



Refers to the subtitle languages available in the disc.

You will be able to choose the subtitles language or, if you prefer, turn them off from the screen.

A DVD disc can have up to 32 different subtitles.



A surround sound effect is generated using only two front speakers.

Adjusting the Aspect Ratio (EZ View)

This function may behave differently depending on the type of disc.

To play back using aspect ratio (DVD)

- 1 Press the **EZ VIEW** button.
 - The screen size changes when the button is pressed repeatedly.
 - The screen zoom mode operates differently depending on the screen setting in the initial DVD menu.
 - To ensure correct operation of the **EZ VIEW** button, you should set the correct aspect ratio in the initial setup.

If you are using a 16:9 TV

For 16:9 aspect ratio discs

- **Wide Screen**
Displays the content of the DVD title in 16:9 aspect ratio.
- **Screen Fit**
The top and bottom portions of the screen are cut off. When playing a 2.35:1 aspect ratio disc, the black bars at the top and bottom of the screen will disappear. The picture will look vertically stretched. (Depending on a type of disc, the black bars may not disappear completely.)
- **Zoom Fit**
The top, bottom, left and right of the screen are cut off and the central portion of the screen is enlarged.

For 4:3 aspect ratio discs

- **Normal Wide**
Displays the content of the DVD title in 16:9 aspect ratio. The picture will look horizontally stretched.
- **Screen Fit**
The top and bottom portions of the screen are cut off and the full screen appears. The picture will look vertically stretched.
- **Zoom Fit**
The top, bottom, left and right portions of the screen are cut off and the central portion of the screen is enlarged.

If you are using a 4:3 TV

For 16:9 aspect ratio discs

- **4:3 Letter Box**
Displays the content of the DVD title in 16:9 aspect ratio. The black bars will appear at the top and bottom of the screen.
- **4:3 Pan Scan**
The left and right portions of the screen are cut off and the central portion of the 16:9 screen is displayed.
- **Screen Fit**
The top and bottom portions of the screen are cut off and a full screen appears. The picture will look vertically stretched.
- **Zoom Fit**
When a 4:3 DVD is viewed on a 16:9 TV, black bars will appear at the left and right of the screen in order to prevent the picture from looking horizontally stretched.

For 4:3 aspect ratio discs

- **Normal Screen**
Displays the content of the DVD title in 4:3 aspect ratio.
- **Screen Fit**
The top and bottom portions of the screen are cut off and the full screen appears. The picture will look vertically stretched.
- **Zoom Fit**
The top, bottom, left and right portions of the screen are cut off and the central portion of the screen is enlarged.

Angle View

Some DVD Movies provide you with various camera angle views on the same scene while they are showing. To activate the feature press the **ANGLE** button.

1 Check the Angle Icon

You'll see the angle icon while watching a DVD with multi angles available.

View Angle Menu Options

When the angle icon comes up to the screen press the **ANGLE** button to see the angle menu.

2



3 Select an Angle option

Press the ◀ or ▶ button to select a camera angle you may wish to see.

Subtitle

Some DVDs provide subtitles in one or more languages. You can use the **SUBTITLE** button to quickly view and change settings.

1 Open Subtitle Menu

During playback, press the **SUBTITLE** button.

- To make the screen disappear, press the **SUBTITLE** button again.



2 Set Subtitle Language

Press the ◀ or ▶ button to select from the available subtitle languages.

- The default is **Off**.

3 Activate Subtitles

Press the ◀ or ▶ button to select **On**.

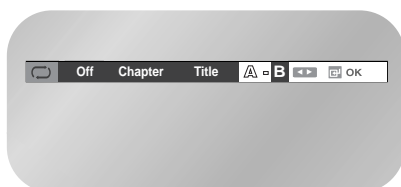


A to B Repeat

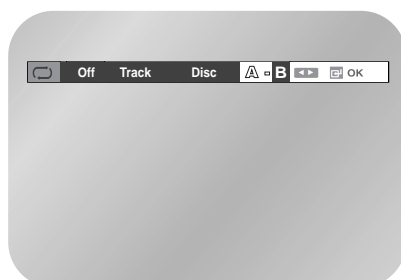
A to B Repeat feature enables you to repeat the designated section on a DVD or CD. To activate, mark where to start (A) and where to end (B) of the section you want to watch.

- 1 Press the **REPEAT** button while in playback mode, then press the ◀ or ▶ button to select **A**.
 - The menu will display **Track** in place of **Disc** if you are playing a CD.

DVD

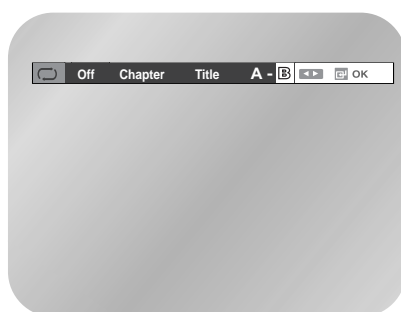


VCD/CD

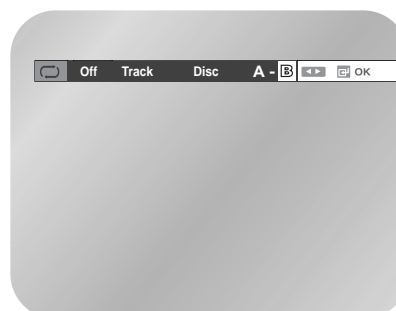


- 2 Press the **OK** button at the beginning of the segment you want to repeat (Point A). The **B** is selected.
 - The minimum A-B Repeat time is 5 seconds.

DVD



VCD/CD



- 3 Press the **OK** button again at the end of the segment you want to repeat (Point B). The segment will begin repeating in a continuous loop.

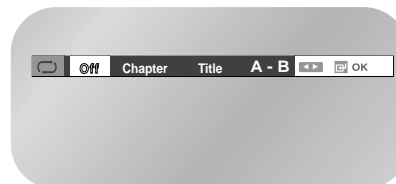
4 Cancel A-B Repeat

Press the **REPEAT** button to open the repeat menu.

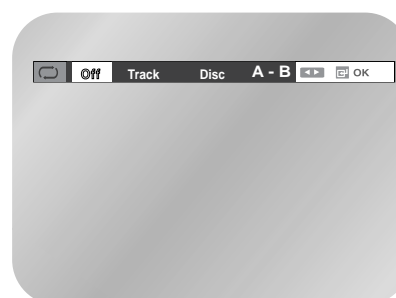
Press the ◀ or ▶ button to selected **Off**, then press the **OK** button.

- It is available to press the **CLEAR** button in order to stop repeat play.

DVD



VCD/CD

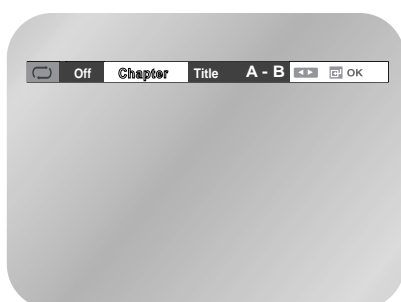


Repeat Chapter/Title

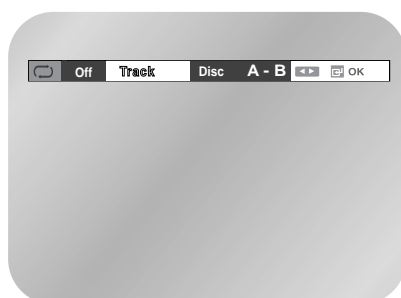
You can repeat a single chapter or a complete title.

- 1 Press the **REPEAT** button while in playback mode to open the repeat menu.
The current repeat mode is displayed.
- 2 Press the ◀ or ▶ button to select **Chapter**.
Press the **OK** button to repeat the current chapter.
• The menu will display **Track** in place of **Disc** if you are playing a CD.
- 3 Press the ◀ or ▶ button to select **Title**.
Press the **OK** button to repeat the title.

DVD



VCD/CD



Audio

Multiple language/audio setup options, such as Dolby Digital 5.1, Dolby Pro Logic, or LPCM 2 Channel audio, are available on some DVDs. You can use the **AUDIO** button to quickly view and select the options available on a disc.

- 1 During playback, press the **AUDIO** button.
Press the ◀ or ▶ button to select the desired language or audio setup on the DVD.
• Languages are represented by abbreviations, e.g. **ENG** for English.

DVD



VCD/CD

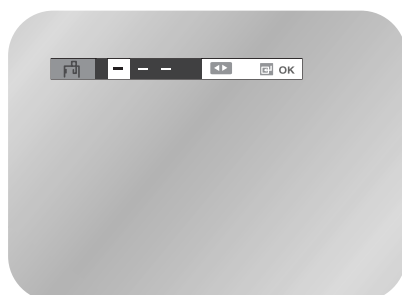


DVD Functions

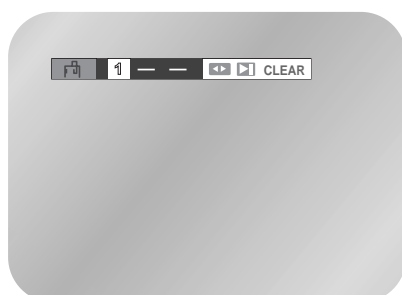
Marks

Up to three Bookmarks can be inserted for a given DVD, allowing you to quickly jump to your favorite scene or song.

- 1 During playback, press the **MARK** button.



- 2 Press the ◀ or ▶ button to select one of the three mark placeholders (- - -). Keep on playing the DVD up to the scene you want to mark, then press the **OK** button. The placeholder (-) is changed to a number (1, 2 or 3).
 - You may continue to set up to three marks. Press the **MARK** button when complete. Depending on the disc, the mark function may not work.



Play Mark

- During playback, press the **MARK** button.
- Press the ◀ or ▶ button to move to a previously set bookmark.
- Press the ▶|| button to play the mark.
- Press the **CLEAR** button to cancel the mark.
- Press the **MARK** button again to exit the mark menu.

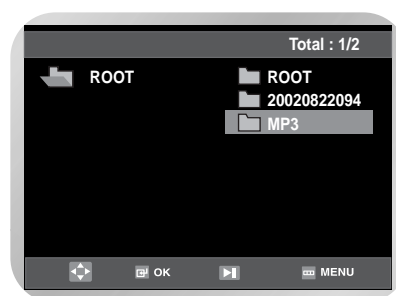
MP3/WMA Play

If you insert an MP3/WMA Disc into the DVD player, you can see the folder directory.

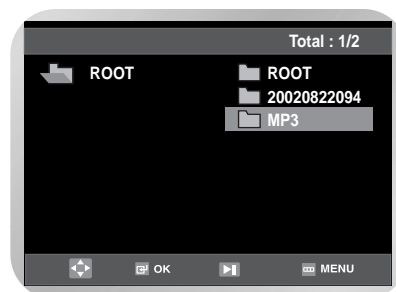
- Select the desired folder in the root directory.
- Press the **OK** or ▶|| button to select the desired folder.

MP3/WMA Play Function

- 1 Press the **OK** or ▶|| button, then the selected music file will be played back.
 - Up to 8 music folders can be displayed at a time. If you have more than 8 folders on a disc, press the ▼ button to display them.

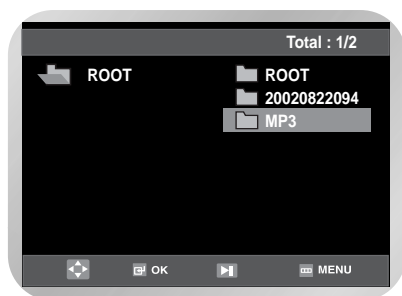


- 2 Press the ▲ or ▼ button to select the desired music folder, then press the **OK** button. Press the ▲ or ▼ button again to select a music file. Press the **OK** button to begin playback of a music file.



Program/Random playback

- 1 Press the **MODE** button in stop mode to switch between the **RANDOM** and **PROGRAM** modes.
 - Press the **REPEAT** button in play mode to hear only music continuously and press it once again to release.



CD-R MP3/WMA discs

When playing CD-R/MP3 or WMA discs, please follow all the recommendations for CD-R above, plus the comments below:

Your MP3 or WMA files should be ISO 9660 or JOLIET format.

ISO 9660 format and Joliet MP3 or WMA files are compatible with Microsoft's DOS and Windows, and with Apple's Mac. These two formats are the most widely used.

When naming your MP3 or WMA files do not exceed 8 characters, and place ".mp3, .wma" as the file extension.

General name format of: Title.mp3. or Title.wma. When composing your title, make sure that you use 8 characters or less, have no spaces in the name, and avoid the use of special characters including: (.,/, \, =, +).

Use a decompression transfer rate of at least 128Kbps when recording MP3 files.

Sound quality with MP3 files basically depends on the rate of compression/decompression you choose. Getting audio CD quality sound requires an analog/digital sampling rate, that is conversion to MP3 format, of at least 128Kbps and up to 160Kbps. However, choosing higher rates, like 192Kbps or more, only rarely give better sound quality. Conversely, files with decompression rates below 128Kbps will not be played properly.

Use a decompression transfer rate of at least 64Kbps when recording WMA files.

Sound quality with WMA files basically depends on the rate of compression/decompression you choose. Getting audio CD quality sound requires an analog/digital sampling rate, that is conversion to WMA format, of at least 64Kbps and up to 192Kbps. Conversely, files with decompression rates below 64Kbps or over 192Kbps will not be played properly.

Do not try recording copyright protected MP3 files.

Certain "securized" files are encrypted and code protected to prevent illegal copying. These files are of the following types: Windows Media™ (registered trade mark of Microsoft Inc) and SDMITM (registered trade mark of The SDMI Foundation). You cannot copy such files.

Important :

The above recommendations cannot be taken as a guarantee that the DVD player will play MP3 recordings, or as an assurance of sound quality. You should note that certain technologies and methods for MP3 file recording on CD-Rs prevent optimal playback of these files on your DVD player (degraded sound quality and in some cases, inability of the player to read the files).

This unit can play a maximum of 500 files and 300 folders per disc.

Program Play & Random Play

1 Program Play (CD/MP3/WMA)

- 1 Press the **MODE** button.
Press the ◀ or ▶ button to select **PROGRAM**.
Press the **OK** button.

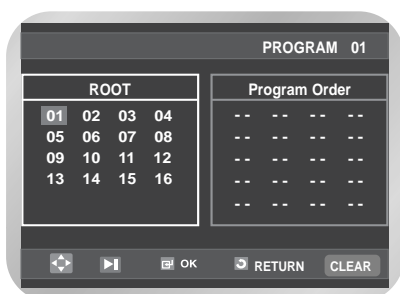


1 Random Play (CD/MP3/WMA)

- 1 Press the **MODE** button.
Press the ◀ or ▶ button to select **RANDOM**.
Press the **OK** button.
The disc will be played in random order.
 - Depending on the disc, the Program and Random Play functions may not work.
 - To resume normal play, press the **CLEAR** button.
 - This unit can support a maximum of 99 programmed order.



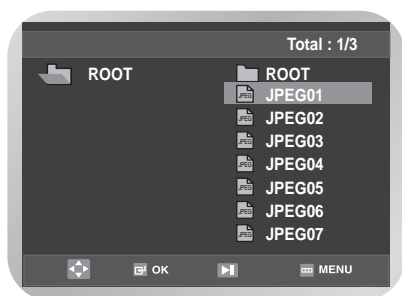
- 2 Press the ▲/▼/◀/▶ buttons to select the first track to add to the program.
Press the **OK** button.
The selection numbers are displayed in the **Program Order** box.



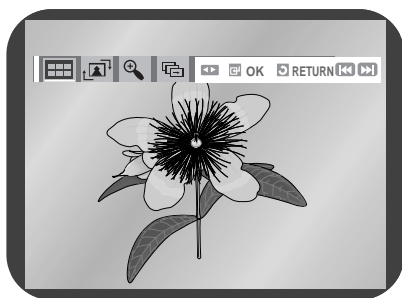
- 3 Press the ▶|| button.
The disc will be played in programmed order.

Picture CD Playback

- 1 Press the ▲ or ▼ button to select the picture you want to view, then press the **OK** button.



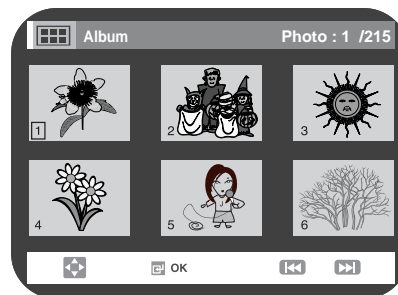
- 2 Press the **OK** button.
The selected picture is displayed.
• Press the ◀◀ or ▶▶ button to display the previous or next picture.



- If no buttons on the remote control are pressed for 10 seconds, the menu will disappear. Press the **DISC MENU** button on the remote control to display the menu again.

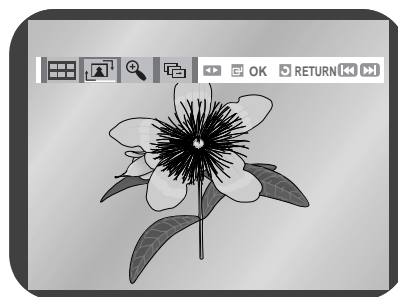
Album Mode

- 3 Press the ◀ or ▶ button to select [Grid].
Press the **OK** button.
The album mode is displayed.
Press the ▲/▼/◀/▶ buttons to select the required picture, then press the **OK** button.
The selected picture is displayed.
• Press the ◀◀ or ▶▶ button to display the previous or next pictures.



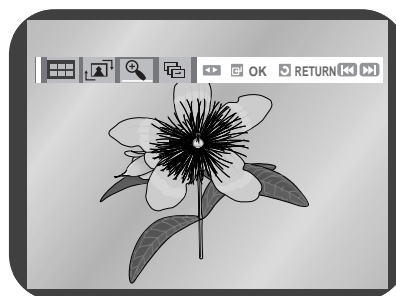
Rotation

- 4 Press the ◀ or ▶ button to select [Rotate].
Each time the **OK** button is pressed, the picture rotates 90 degrees clockwise.




Zoom

- 5 Press the ◀ or ▶ button to select [Zoom].
Each time the **OK** button is pressed, the picture is enlarged up to 4X.
(Normal → 2X → 4X → Normal)



Slide show

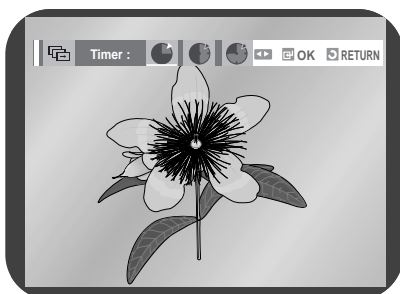
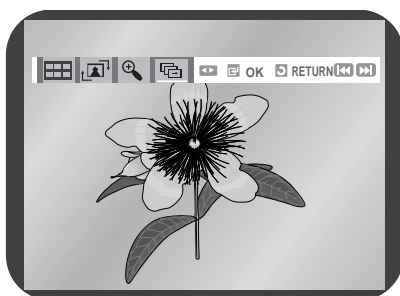
6

Press the ◀ or ▶ button to select .
Press the **OK** button.

The 3 icons are displayed for time interval.

- When this icon is selected and the **OK** button is pressed, the pictures change automatically with about an 6 second interval.
- The pictures change automatically with about an 12 second interval.
- The pictures change automatically with about an 18 second interval.

Press the ◀ or ▶ button to select one of these.
Press the **OK** button.



- Depending on the file size, each interval between images may take longer or shorter than the manual suggests.

CD-R JPEG Discs

- Only files with the “.jpg” and “.JPG” extensions can be played.
- If the disc is not closed, it will take longer to start playing and not all of the recorded files may be played.
- Only CD-R discs with JPEG files in ISO 9660 or Joliet format can be played.
- The name of the JPEG file may not be longer than 8 characters and should contain no blank spaces or special characters (. / = +).
- Only a consecutively written multisession disc can be played. If there is a blank segment in the multisession disc, the disc can be played only up to the blank segment.
- A maximum of 500 images can be stored on a single CD.
- Only Kodak Picture CDs can be played.
- When playing a Kodak Picture CD, only the JPEG files in the pictures folder can be played.
- Picture discs other than Kodak Picture CD may take longer to start playing or may not play at all.
- If a number of files in 1 Disc is over 500, only 500 JPEG file can be played.
- If a number of folders in 1 Disc is over 300, only JPEG files in 300 folders can be played.

DivX/MPEG4 Special Playback Features (DVD-V6500)

During DivX/MPEG4 playback you can select from the following special playback options. To resume normal playback, press the ►|| button.

1 Still

Press the ►|| button on the remote control during playback.

- The picture will still and the audio will mute.
- To resume playback, press the ►|| button.
- If the player is left in Still mode for 5 minutes, it will stop automatically.

2 Frame Advance (Step)

While in playback mode, press the F.ADV/STEP button on the remote control to advance one frame at a time.

- Audio is muted during Frame Advance mode.
- Press ►|| to resume normal playback.



- Frame Advance operates only in the forward direction.

3 Slow Motion

During playback, press the ►|| button to Slow the image. Then use the Search ►► to play in slow motion at variable speeds.

- Each press increases the slow motion speed playback to 1/8, 1/4 or 1/2 normal speed.
- Audio is muted during slow motion playback.
-

4 Stop/Resume

- Press the ■ button once to stop playback. To resume the DivX/MPEG4 from the point where the disc stopped, press the ►|| button.

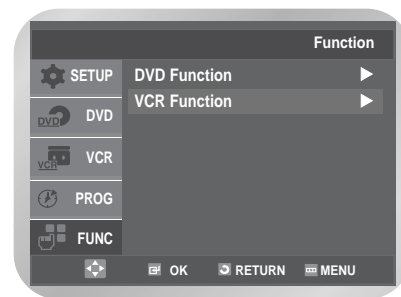
5 Zoom

During play, press the MENU button on the remote. Then press the corresponding ▲, ▼ buttons to select the **FUNC** option.

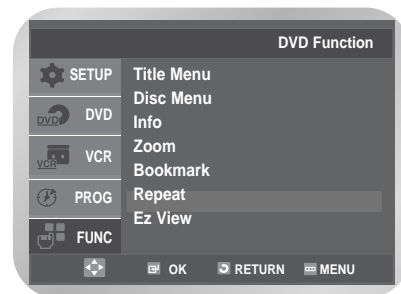
The **Function** menu is displayed.

Press the **OK** or ► button.

Press the ▲ or ▼ button to select **VCR Function**.








- Press the **OK** or ► button.
- Press the ▲ or ▼ button to select **ZOOM**.



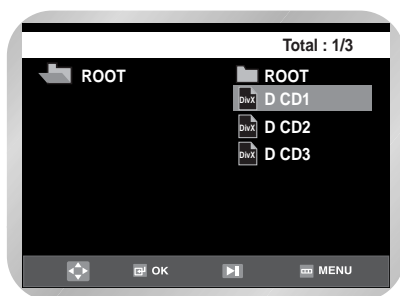
Auto Scaling : CIF(100kbps)~D1(784kbps) resolution.
If the file resolution is small, it scales up to 2 times automatically. So you can see the more larger screen.

DivX/MPEG4 Playback (DVD-V6500)



- 1 When the disc is inserted, the file structure of the disc will be shown. Depending on the file format, a different icon will appear next to each file. The  and  files will have been highlighted.

Use ,  to select the movie file, and then press OK or .

Result : When the 'Reading Index.....' message is displayed, wait for a second or two. The movie will be played back.



If the "Codec. Not Supported" message is displayed, the selected file cannot be played back.

- 1 To navigate to a specific time while viewing the movie, press the INFO. key. The file format of the current file ( or ) and time information will be displayed.

- 2 Use the numeric keys on the remote control to enter the time to jump to that time in the movie.



DivX/MPEG4 Feature Table

MPEG4 Supported

Avi files are used to contain the audio and video data; these must be stored on CD in the ISO 9660 format.

		SPEC
VIDEO Compatibility	DivX 3.11 upper	Up to the latest VERSION
	XviD	
	WMV(?)	WMV V1/V2/V3/V7
AUDIO Compatability	MP3	CBR : 80kbps~320kbps
	AC3	CBR : 128kbps~448kbps
	AAC(?)	
	WMA	CBR : 56kbps~160kbps

MPEGs containing DivX can be divided into Video and Audio.

- Video compatibility :

All versions of DivX later than 3.11 (including the latest 5.1) are supported. In addition, XviD is supported. For WMV, V1, V2, V3, and V7 formats are possible.

- Audio compatibility :

MP3s encoded at bitrates from 80kbps to 320kbps, AC3s from 128kbps to 448kbps, and WMAs from 56kbps to 160kbps are supported.

- In addition, for subtitles, Samsung will support Text format (SMI).

MEMO

4. Disassembly and Reassembly

4-1 Cabinet and PCB

4-1-1 Cabinet Top Removal

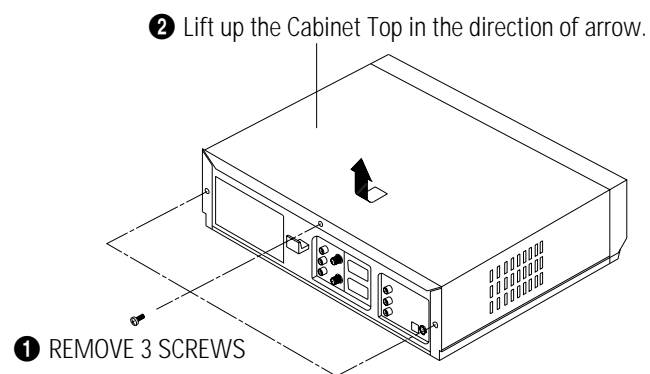


Fig. 4-1 Cabinet Top Removal

4-1-2 Ass'y Bottom Cover Removal

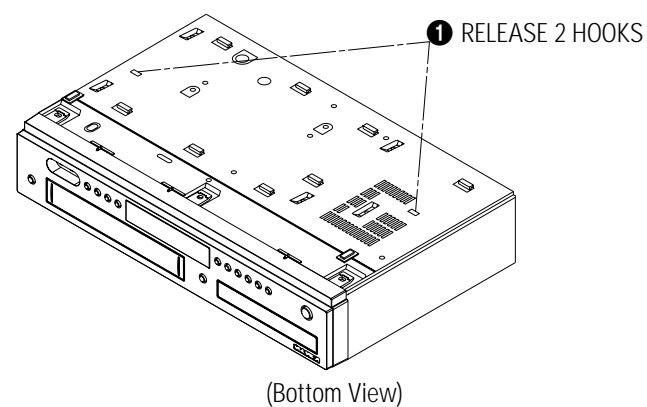


Fig. 4-2 Ass'y Bottom Cover Removal

4-1-3 Ass'y Front Panel Removal

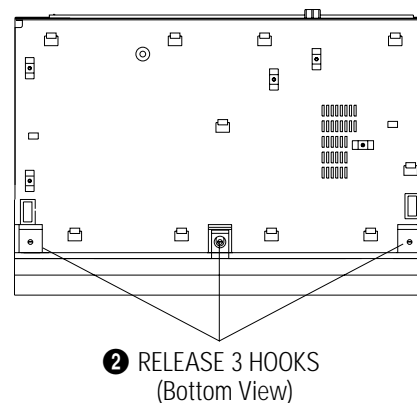
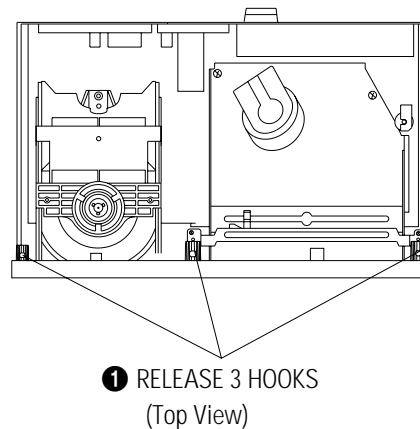


Fig.4-3 Ass'y Front Panel Removal

4-1-4 Function PCB Removal

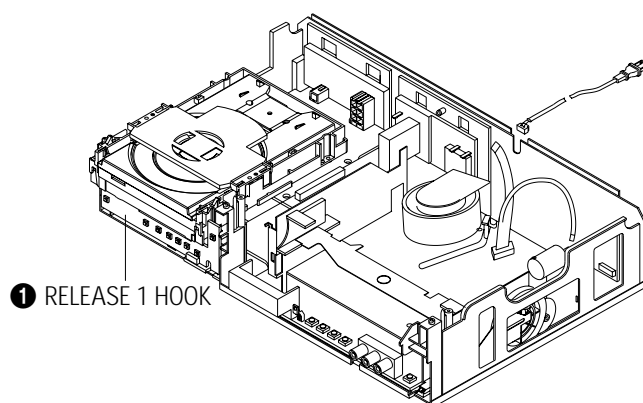


Fig. 4-4 Function PCB Removal

4-1-5 Chassis Removal

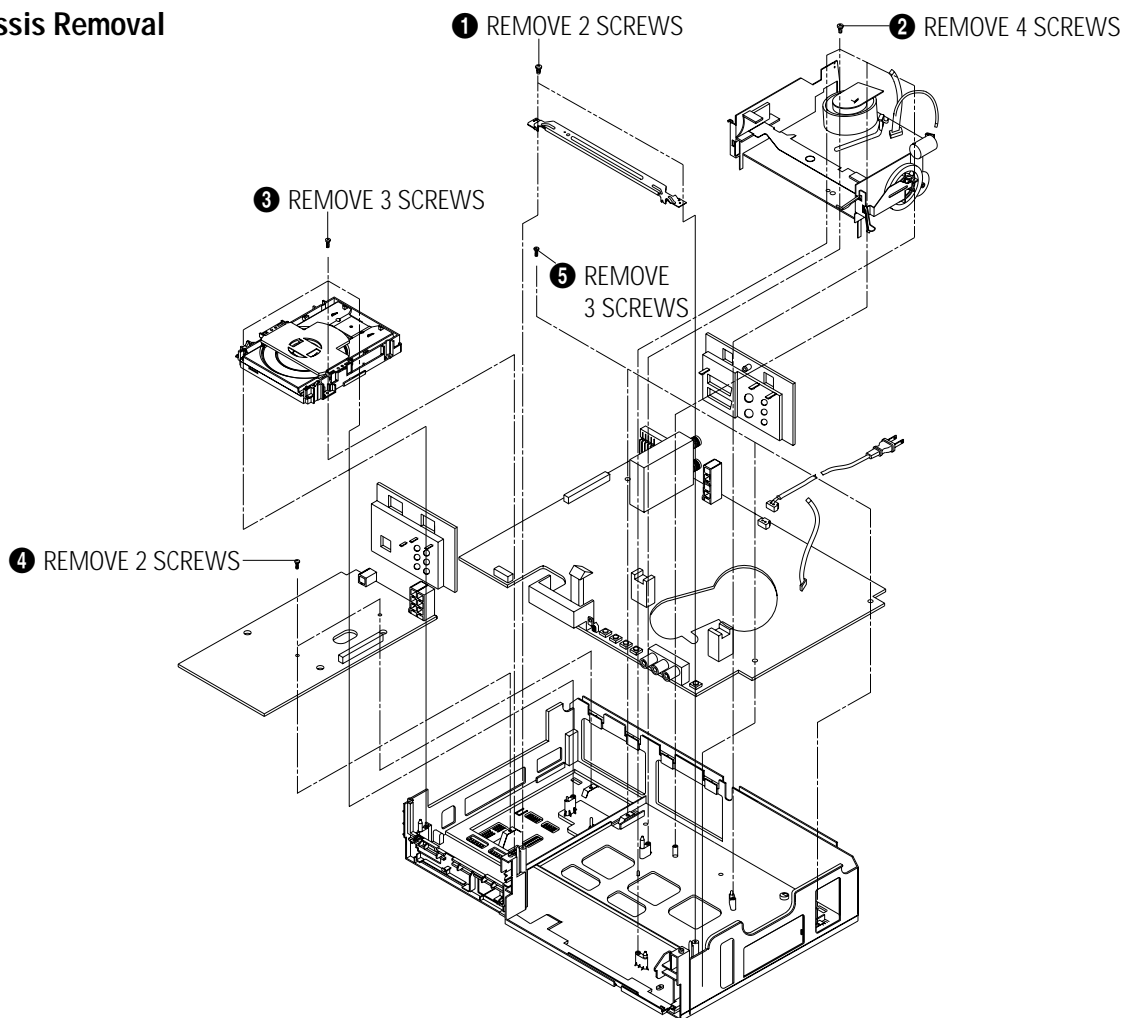


Fig. 4-5 Chassis Removal

4-1-6 VCR Main PCB Removal

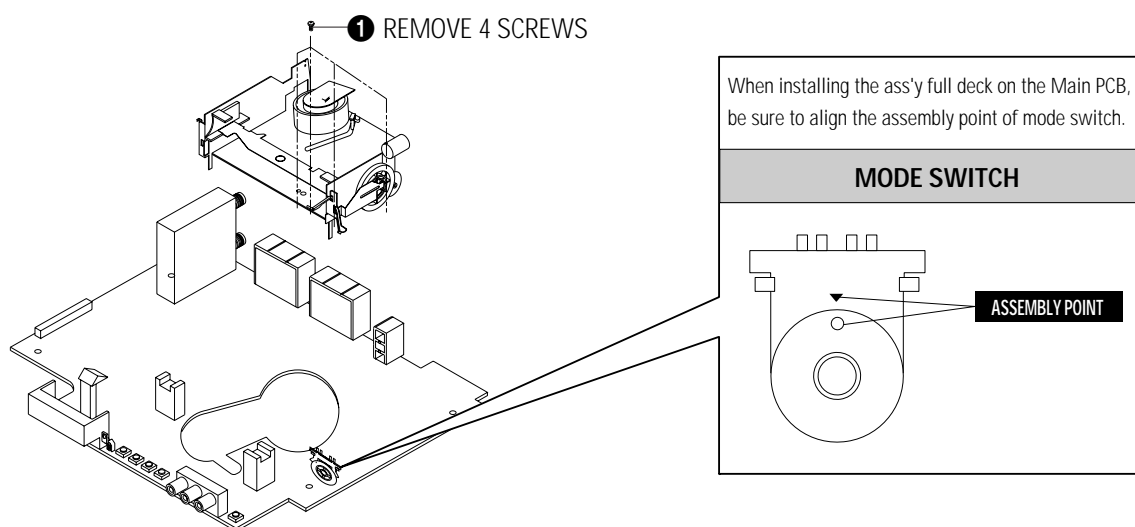


Fig. 4-6 VCR Main PCB Removal

4-2 Circuit Board Locations

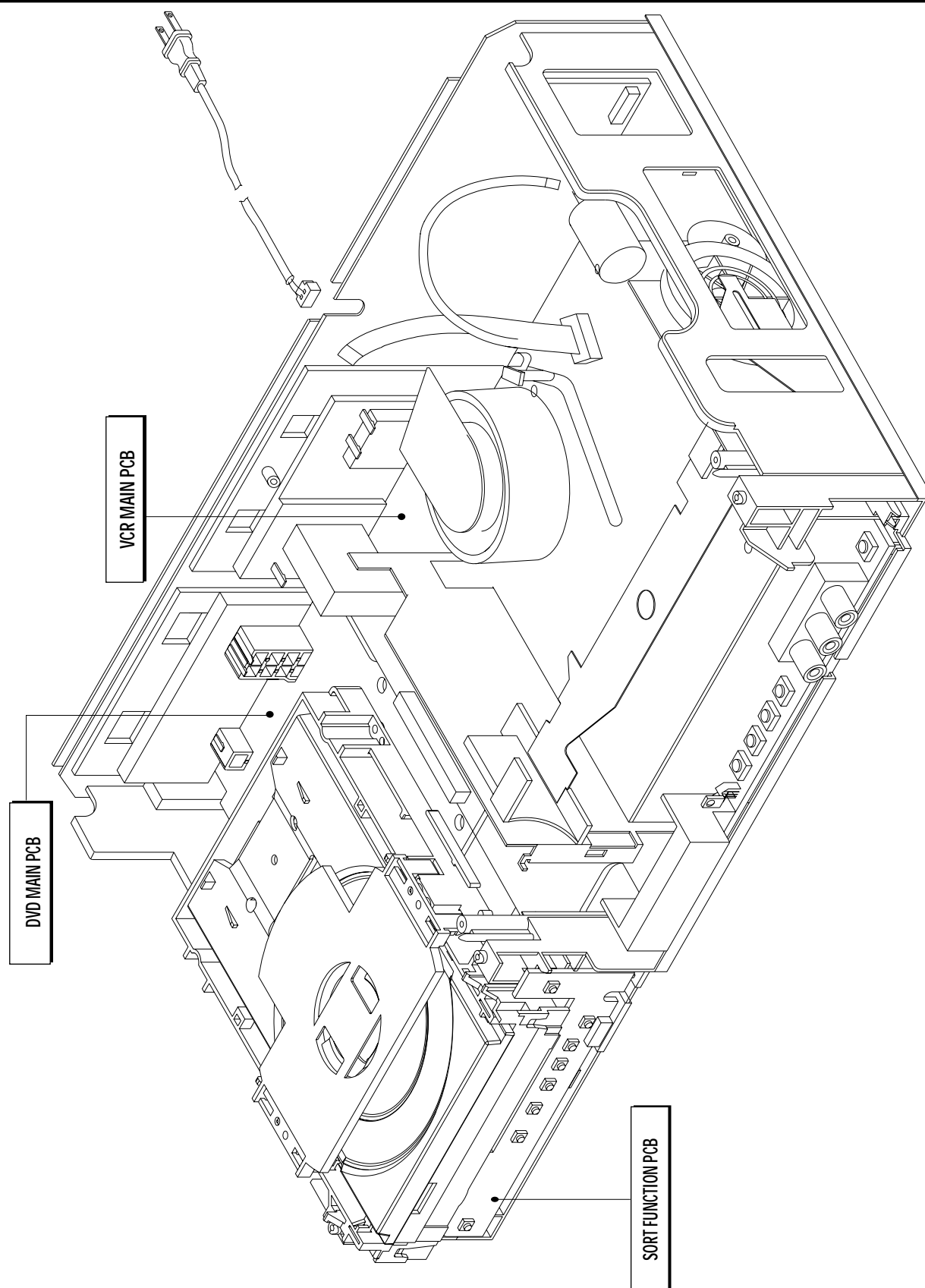


Fig. 4-7 Circuit Board Locations

4-3 VCR Deck Parts Locations

4-3-1 Top View

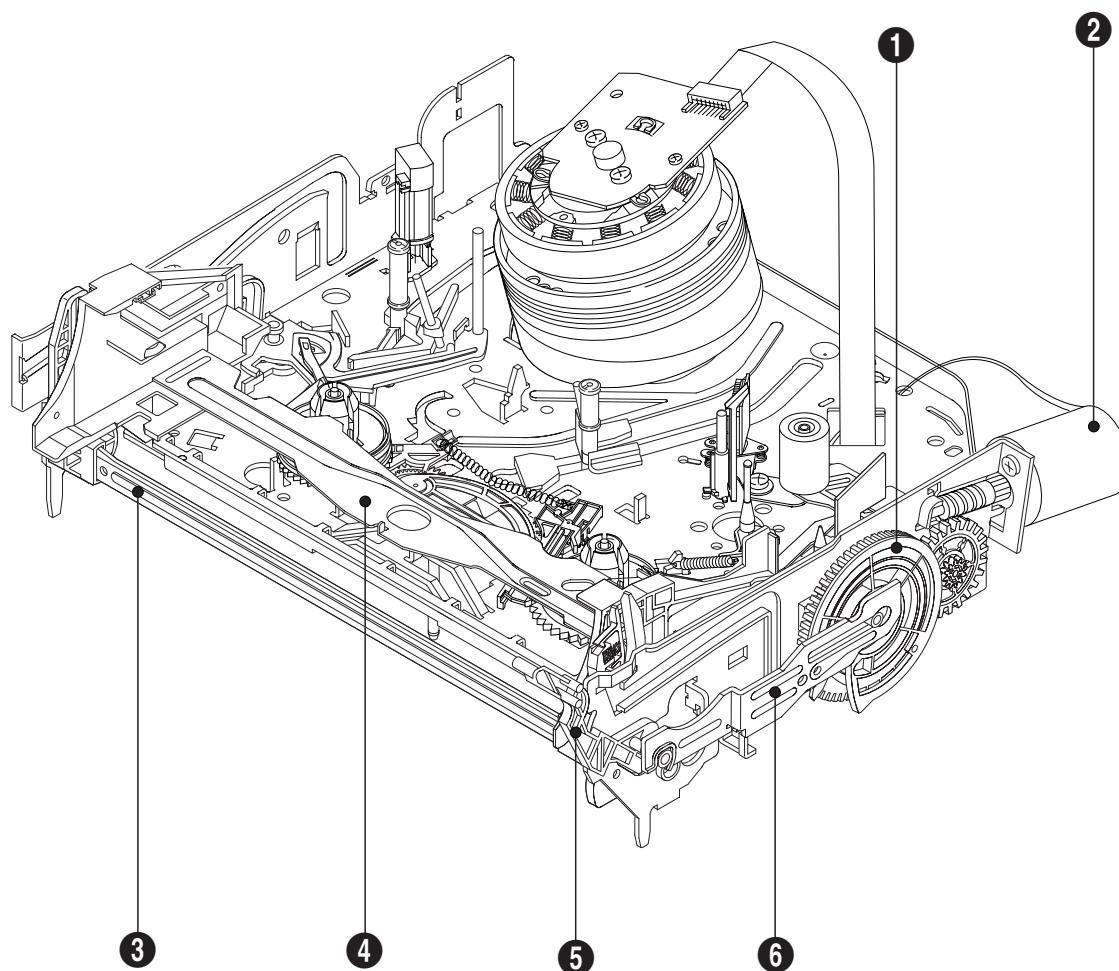


Fig. 4-8 Top parts Location-1

- ❶ GEAR FL CAM
- ❷ MOTOR LOADING ASS'Y
- ❸ LEVER FL ARM ASS'Y
- ❹ HOLDER FL CASSETTE ASS'Y
- ❺ LEVER FL DOOR
- ❻ SLIDER FL DRIVE

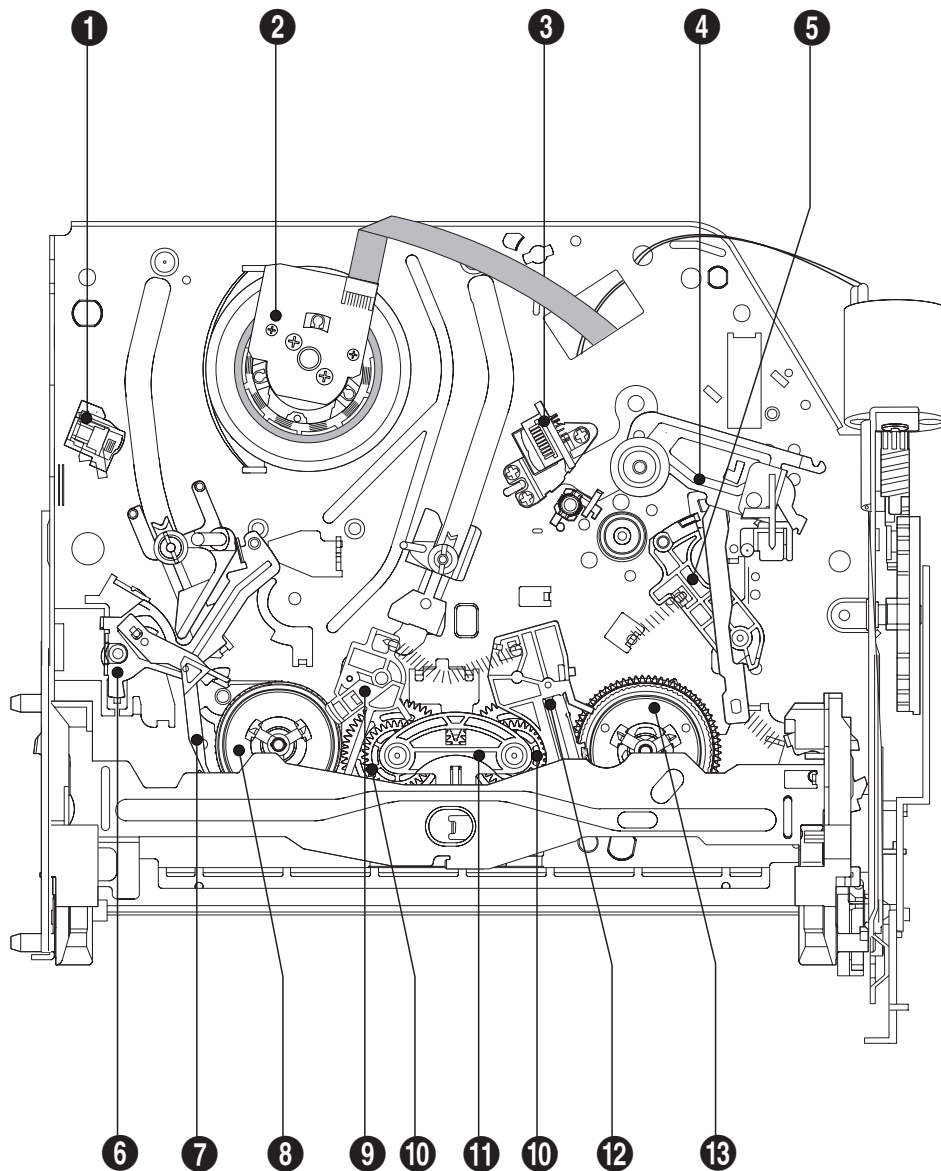


Fig.4-9 Top Parts Location-2

- | | |
|--------------------------|-----------------------|
| ❶ FE HEAD | ❸ DISK S REEL |
| ❷ CYLINDER ASS'Y | ❹ LEVER S BRAKE ASS'Y |
| ❸ ACE HEAD ASS'Y | ❺ GEAR IDLE |
| ❹ LEVER UNIT PINCH ASS'Y | ❻ LEVER IDLE |
| ❺ LEVER #9 GUIDE ASS'Y | ❼ LEVER T BRAKE ASS'Y |
| ❻ LEVER TENSION ASS'Y | ❽ DISK T REEL |
| ❼ BAND BRAKE ASS'Y | |

4-3-2 Bottom View

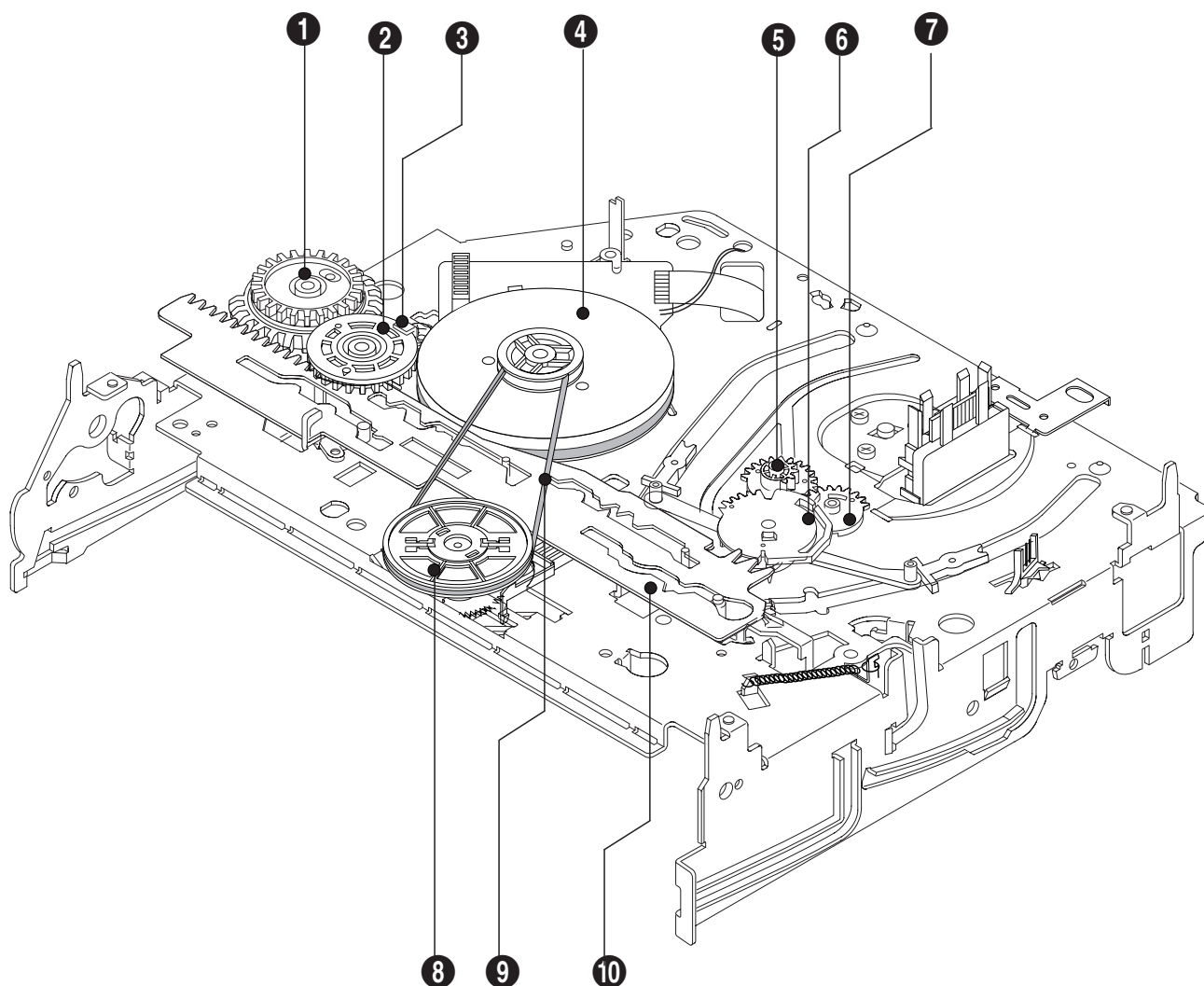


Fig. 4-10 Bottom Parts Location

- ❶ GEAR JOINT 1
- ❷ GEAR JOINT 2
- ❸ BRACKET GEAR
- ❹ MOTOR CAPSTAN ASS'Y
- ❺ LEVER T LOAD ASS'Y
- ❻ GEAR LOADING DRIVE
- ❼ LEVER S LOAD ASS'Y
- ❽ HOLDER CLUTCH ASS'Y
- ❾ BELT PULLEY
- ❿ SLIDER CAM

4-4 VCR Deck

4-4-1 Holder FL Cassette Ass'y Removal

- 1) Pull the Holder FL Cassette Ass'y ❶ to the eject position.
- 2) Pull the Holder FL Cassette Ass'y ❶ as grasping the Holder FL Cassette Ass'y ❶ and Lever FL Cassette-R ❷ in the same time to release hooking from Main Base until the Boss [A] of Holder FL Cassette Ass'y ❶ is taken out from the Rail [B].
- 3) Lift the Holder FL Cassette Ass'y ❶, in this time, you have to grasp the Lever FL Cassette-R ❷ continuously until the Holder FL Cassette Ass'y ❶ is taken out completely.

Note : Be sure to insert Lever FL Cassette-R ❷ in the direction of "A" to prevent separation and breakage of the Lever FL Cassette-R ❷ at disassembling and reassembling.

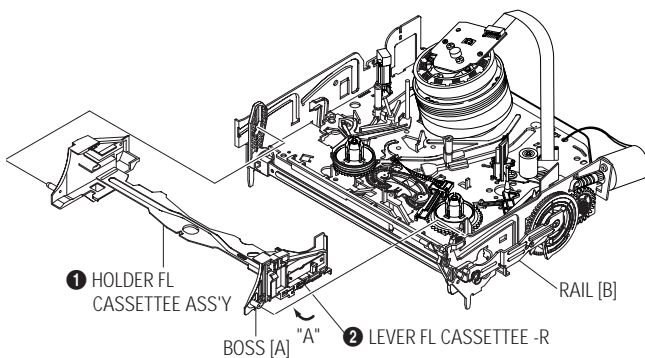


Fig. 4-11 Holder FL Cassette Ass'y Removal

4-4-2 Lever FL Arm Ass'y Removal

- 1) Push the hole "A" in the direction of arrow "B" use the pin.(about Dia. 2.5)
- 2) Pull out the Lever FL Arm Ass'y ❶ from the Boss of Main Base.
- 3) Remove the Lever FL Arm Ass'y ❶ in the direction of arrow "C".

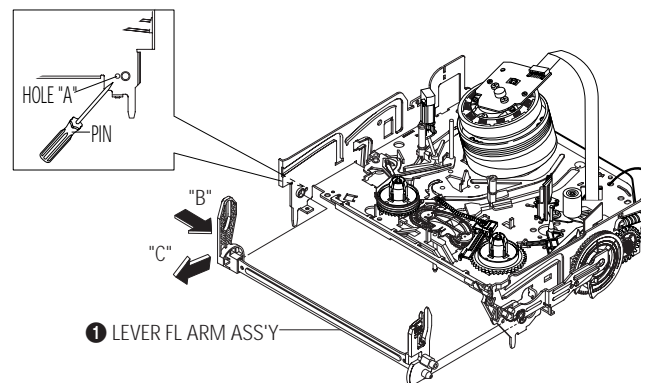


Fig. 4-12 Lever FL Arm Ass'y Removal

4-4-3 Lever FL Door Removal

- 1) Release the Hook ❷ and Remove the Lever FL Door ❶ in the direction of arrow "A".

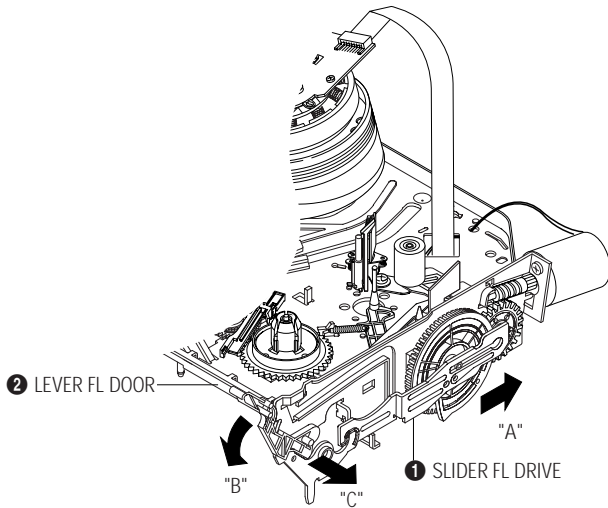


Fig.4-13 Lever FL Door Removal

4-4-4 Slider FL Drive, Gear FL Cam Removal

- 1) Pull the Slider FL Drive ❶ to the front direction.
- 2) Remove the Slider FL Drive ❶ in the direction of arrow. (Refer to Fig. 4-13)
- 3) Remove the Gear FL cam ❷.

Note : When reinstalling be sure to reassemble Slider FL drive ❶ after you insert the Boss of Lever FL ARM-R in Groove of Slider FL drive ❶.

Assembly : Align the Gear FL Cam ❶ with the Gear worm wheel Post as shown drawing. (Refer to Timing point)

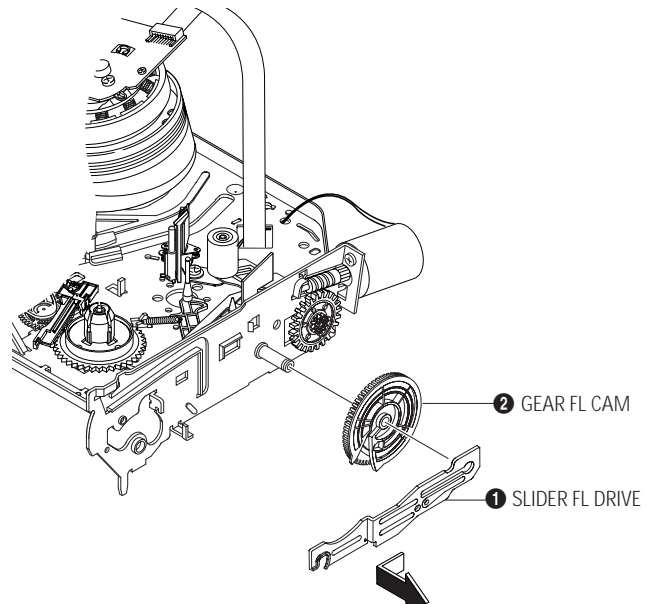


Fig.4-14 Slider FL Drive Removal

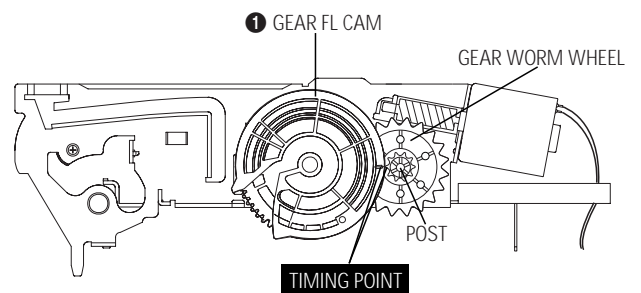


Fig. 4-15 Gear FL Cam, Gear Worm

4-4-5 Gear Worm Wheel Removal

- 1) Remove the Gear Worm wheel ❶.

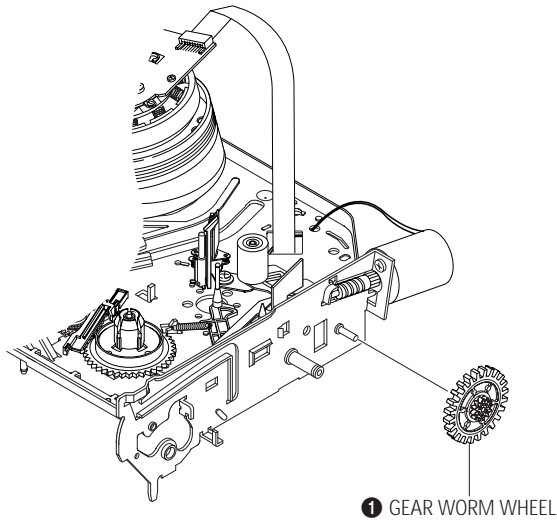


Fig. 4-16 Gear Worm Wheel Removal

4-4-6 Cable Flat Removal

- 1) Remove the Drum connecting part of Cable Flat ❶ from Connector Wafer ❷.

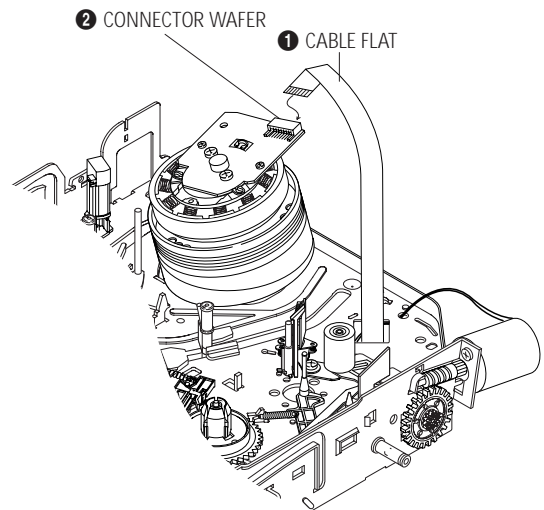


Fig. 4-17 Cable Flat Removal

4-4-7 Motor Loading Ass'y Removal

- 1) Remove the screw ❶.
- 2) Remove the Motor Loading Ass'y ❷.

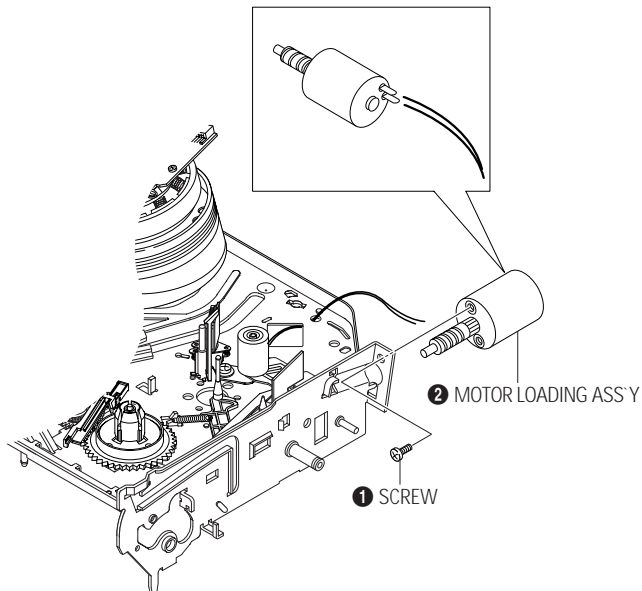


Fig.4-18 Motor Loading Ass'y Removal

4-4-8 Bracket Gear, Gear Joint 2, 1 Removal

- 1) Remove the SCREW ❶.
- 2) Remove the Bracket Gear ❷.
- 3) Remove the Gear Joint 2 ❸.
- 4) Remove the Gear Joint 1 ❹.

Assembly :

- 1) Be sure to align dot mark of Gear Joint 1 ❶ with dot mark of Gear Joint 2 ❷ as shown Fig 4-20. (Refer to Timing point1)
- 2) Confirm the Timing Point 2 of the Gear Joint 2 ❷ and Slider Cam ❸.

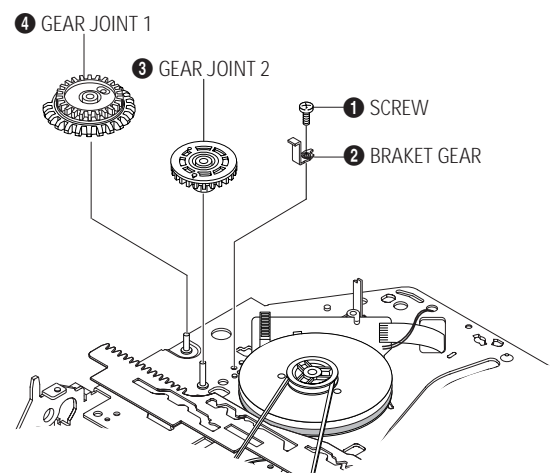


Fig. 4-19 Bracket Gear, Gear Joint 1,2 Removal

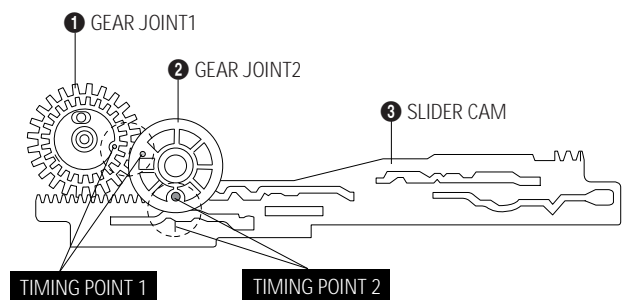


Fig. 4-20 Gear Joint 1,2 Assembly

4-4-9 Gear Loading Drive, Slider Cam, Lever Load S, T Ass'y Removal

- 1) Remove the Belt Pulley. (Refer to Fig. 4-38)
- 2) Remove the Gear Loading Drive ❶ after releasing Hook [A] in the direction arrow as shown in detail drawing.
- 3) Remove the Slider Cam ❷.
- 4) Remove the Lever Load S Ass'y ❸ & Lever Load T Ass'y ❹.

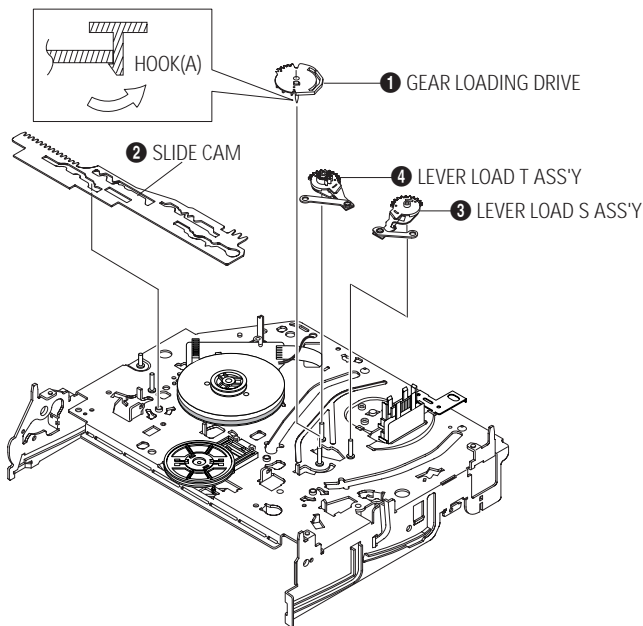


Fig. 4-21 Gear Loading Drive, Slider Cam, Lever T, S Load Ass'y Removal

4-4-10 Gear Loading Drive, Slider Cam, Lever Load S, T Ass'y Assembly

- 1) When reinstalling, be sure to align dot of Lever Load T Ass'y ❶ with dot of Lever Load S Ass'y ❷ as shown in drawing, (Refer to Timing Point 1).
- 2) Insert the Pin A,B,C,D into the Slider Cam ❸ hole,
- 3) Be sure to align dot of Lever Load T ❶ and dot of Gear Loading Drive ❹, (Refer to Timing Point 2).
- 4) Aline dot of Gear Loading drive ❹ with mark of Slider Cam ❸ as shown in drawing (Refer to Timing Point 3).

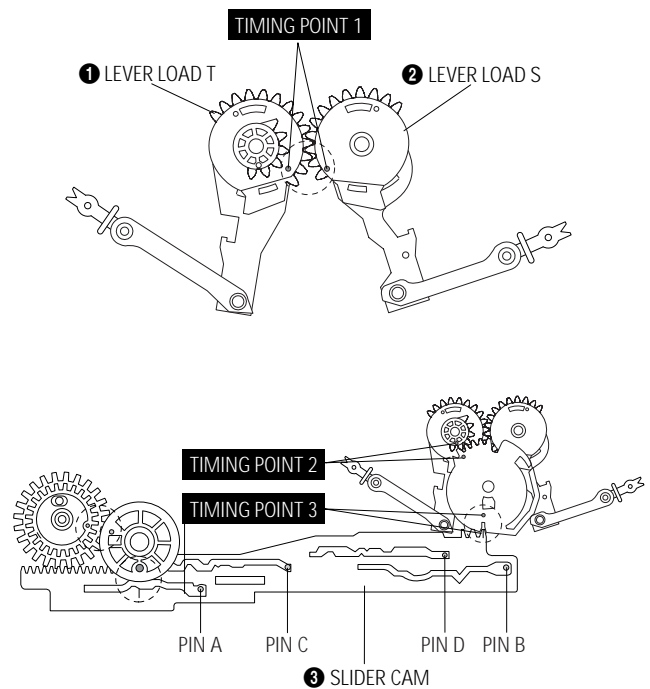


Fig.4-22 Gear Loading Drive, Slider Cam, Lever Load S, T Ass'y Assembly

4-4-11 Lever Pinch Drive, Lever Tension Drive Removal

- 1) Remove the Lever Pinch Drive ❶, Lever Tension Drive ❷.

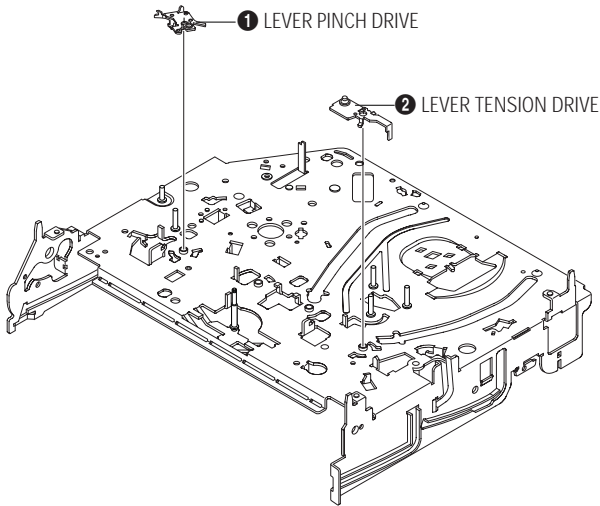


Fig. 4-23 Lever Pinch Drive,
Lever Tension Drive Removal

4-4-12 Lever Tension Ass'y, Band Brake Ass'y Removal

- 1) Remove the Lever Brake S Ass'y (Refer to Fig 4-25).
- 2) Remove the Spring Tension Lever ❶.
- 3) Rotate stopper of Main Base in the direction of arrow "A".
- 4) Lift the Lever Tension Ass'y ❷ & Band brake Ass'y ❸.

Note :

- 1) When replacing the Lever Tension Ass'y ❷, be sure to apply Grease on the post,
- 2) Take care not to touch stain on the felt side, and not to be folder and broken Band brake Ass'y
- 3) After Lever Tension Ass'y seated, Rotate stopper of Main Base to the Mark[B].

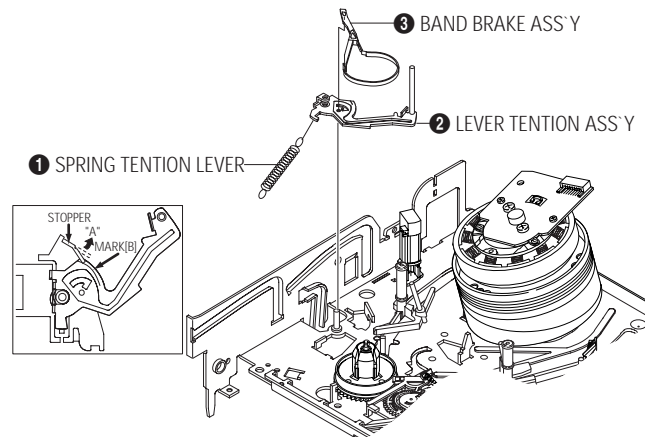


Fig. 4-24 Lever Tension Ass'y,
Band Brake Ass'y Removal

4-4-13 Lever Brake S, T Ass'y Removal

- 1) Release the Hook [A] and the Hook [B], [C] in the direction of arrow as shown in Fig 4-25.
- 2) Lift the Lever S, T Brake Ass'y ❶, ❷ with spring brake ❸.

Assembly :

- 1) Assemble the Lever S Brake Ass'y ❶ on the Main Base.
- 2) Assemble the Lever T Brake Ass'y ❷ with spring brake ❸.

Note : Take extreme care not to be folded and transformed Spring Brake at removing or reinstalling.

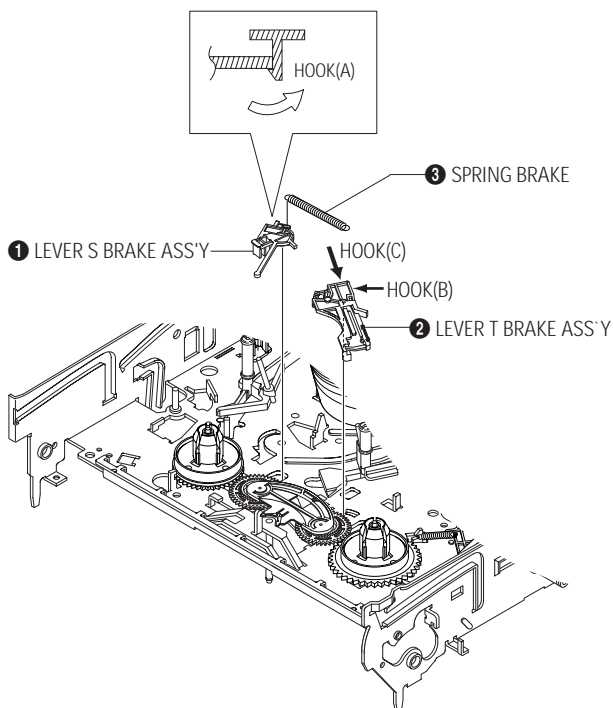


Fig. 4-25 Lever Brake S, T Ass'y Removal

4-4-14 Gear Idle Ass'y Removal

- 1) Push the Lever Idle ❶ in the direction of arrow "A", "B".
- 2) Lift the Lever Idle ❶.

Assembly :

- 1) Apply oil in two Bosses of Lever Idle ❶.
- 2) Assemble the Gear Idle ❷ with the Lever Idle ❶.

Note : When replacing the Gear Idle ❷, be sure to add oil in the boss of Lever Idle ❶.

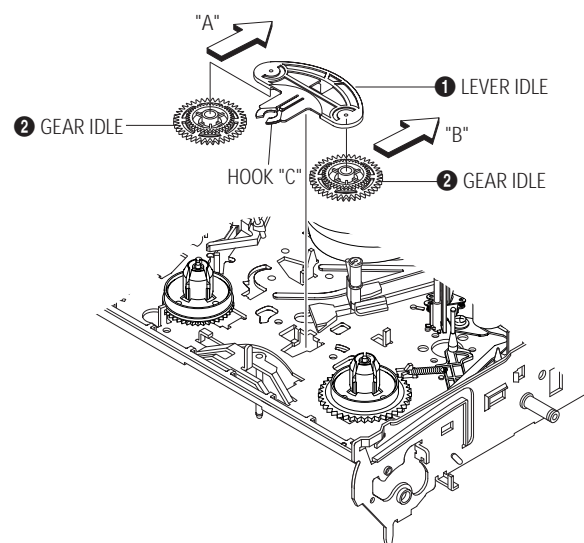


Fig. 4-26 Gear Idle Ass'y Removal

4-4-15 Disk S, T Reel Removal

- 1) Lift the Disk S, T Reel ❶, ❷.

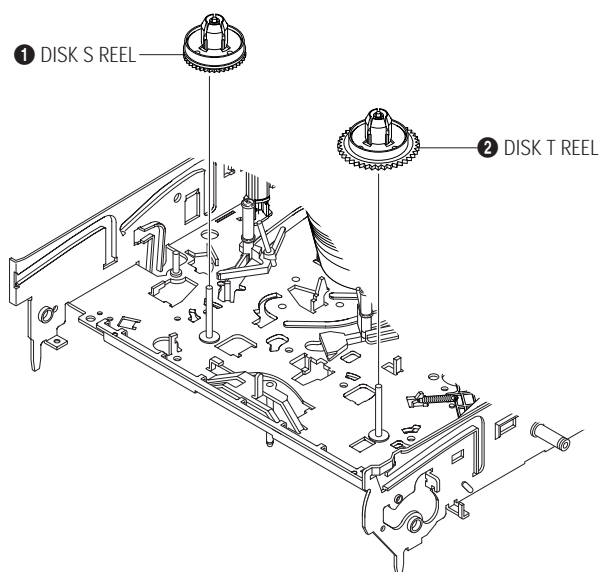


Fig. 4-27 Disk S, T Reel Removal

4-4-16 Holder Clutch Ass'y Removal

- 1) Remove the Washer Slit ❶.
- 2) Lift the Holder Clutch Ass'y ❷.

Note : When you reinstall Holder Clutch Ass'y

- 1) Check the condition of spring as shown in detail A.
- 2) Don't push Holder Clutch Ass'y down with excessive force Just insert Holder Clutch Ass'y into post center with dead force and Rotate it smoothly. Be sure to confirm that spring is in the slit of Gear Center Ass'y as shown in detail B.

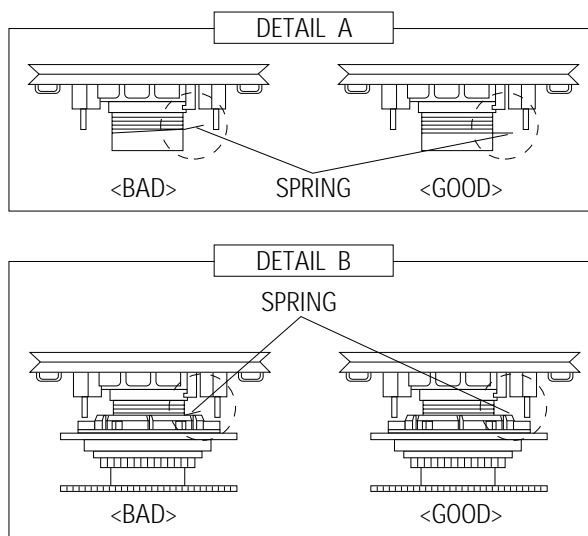
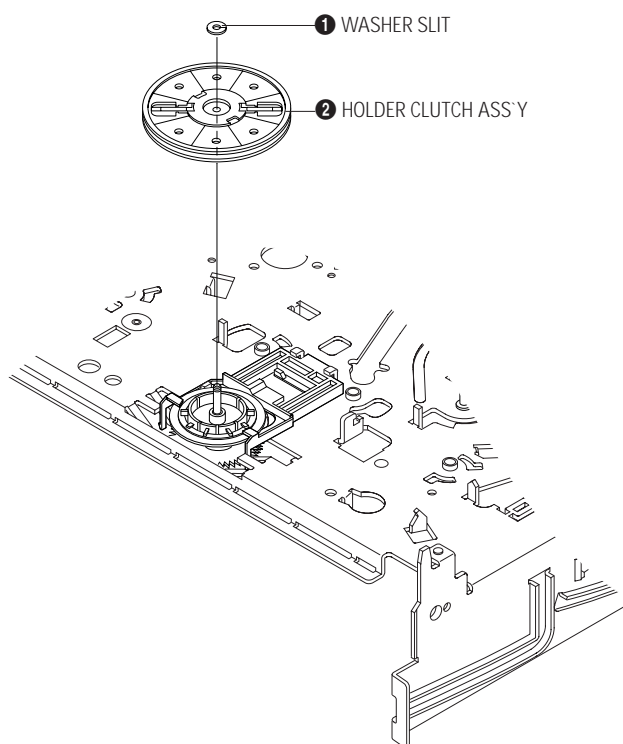


Fig. 4-28 Holder Clutch Ass'y Removal

4-4-17 Lever Up Down Ass'y, Gear Center Ass'y Removal

- 1) Remove the 2 hooks in the direction of arrow as shown Fig. 4-28 and lift the Lever Up Down Ass'y ❶.
- 2) Lift the Gear Center Ass'y ❷.

Assembly :

- 1) Insert the Lever Up Down Ass'y ❶ in the rectangular holes on Main Base as shown in Fig 4-30.
- 2) Lift the Lever Up Down Ass'y ❶ about 35°.
- 3) Insert Ring of the Gear Center Ass'y ❷ in the Guide of the Lever Up Down Ass'y ❶.
- 4) Insert the Gear Center Ass'y ❷ in the post on Main Base.
- 5) Push down the Lever Up Down Ass'y ❶ for locking of the Hook.

Note :

- 1) Take care not to separate and sentence does not mark sense.
- 2) Be sure to confirm that Ring of the Gear Center Ass'y ❷ is in the Guide of the Lever Up Down Ass'y ❶ after finishing assembly of Lever Up Down Ass'y ❶ and Gear Center Ass'y ❷.

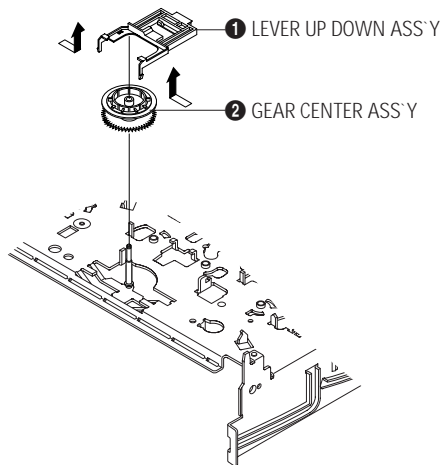


Fig.4-29 Lever Up Down Ass'y Removal

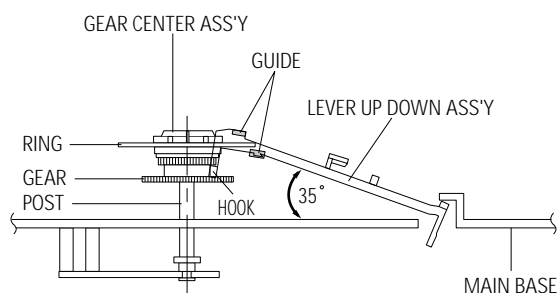


Fig. 4-30 Lever Up Down Ass'y Removal

4-4-18 Guide Cassette Door Removal

- 1) Lift the Hook [A].
- 2) Rotate the Guide Cassette Door ❶ in the direction of arrow.

Note : After reinstalling the Guide Cassette Door ❶ sure the Hook [A].

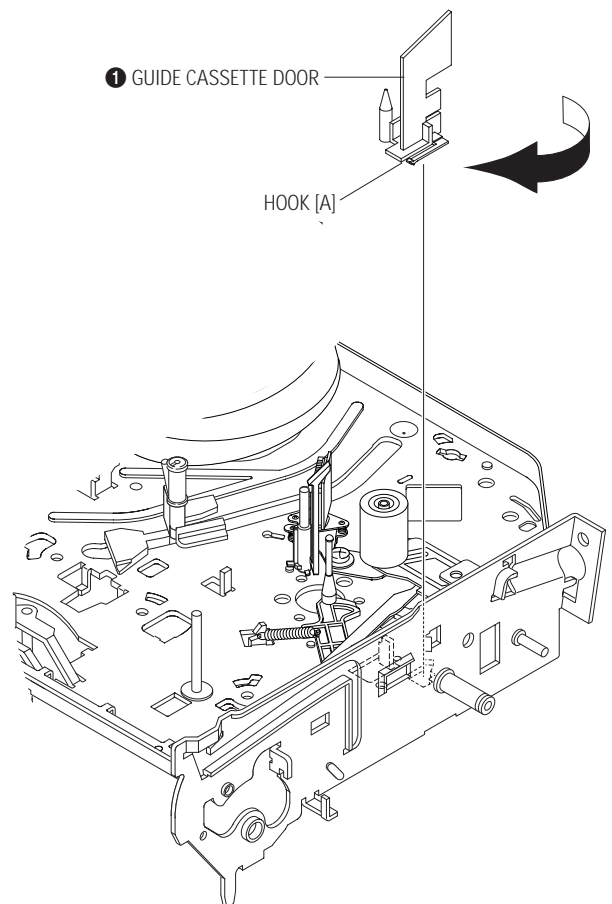


Fig. 4-31 Guide Cassette Door Removal

4-4-19 Lever Unit Pinch Ass'y, Plate Joint, Spring Pinch Drive Removal

- 1) Lift the Unit Pinch Ass'y ❶.
- 2) Remove the Plate Joint ❷ from Lever Pinch Drive.
- 3) Remove the Spring Pinch Drive ❸.

Note :

- 1) Take extreme care not to touch the grease on the Roller Pinch.
- 2) When reinstalling, be sure to apply grease on the post pinch roller.

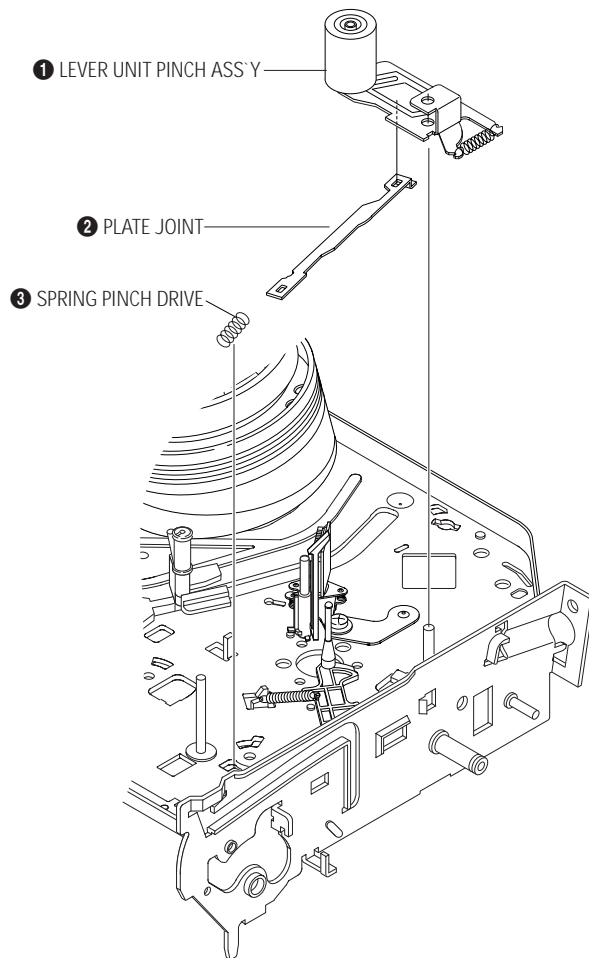


Fig. 4-32 Lever Unit Pinch Ass'y, Plate Joint, Spring Pinch Drive Removal

4-4-20 Lever #9 Guide Ass'y Removal

- 1) Remove the Spring #9 Guide ❶.
- 2) Lift the Spring #9 Guide Ass'y ❷ in the direction of arrow "A".

Note :

- 1) Take extreme care not to get grease on the tape Guide Post.
- 2) After reinstalling, check the bottom side of the Post #9 Guide to the top side of Main Base.

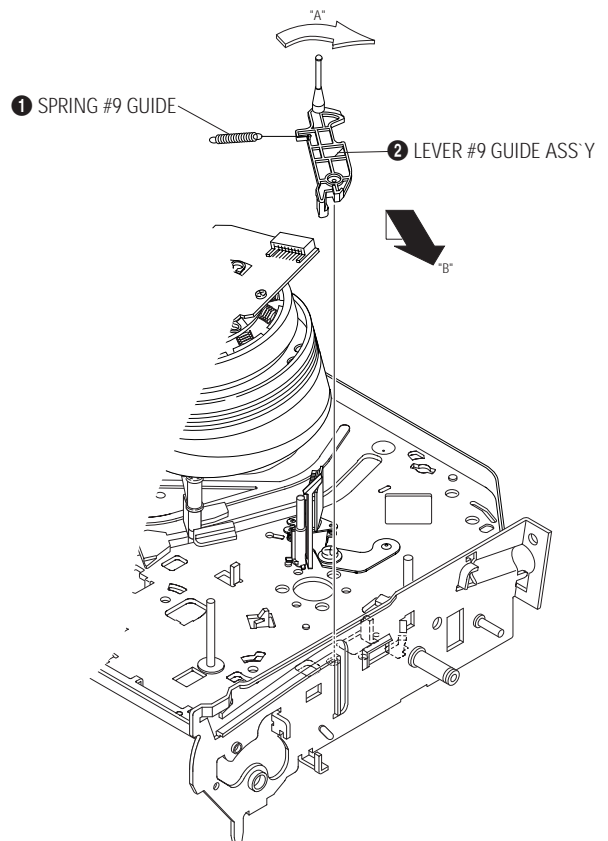


Fig. 4-33 Lever #9 Guide Ass'y Removal

4-4-21 FE Head Removal

- 1) Remove the screw ❶.
- 2) Lift the FE Head ❷.

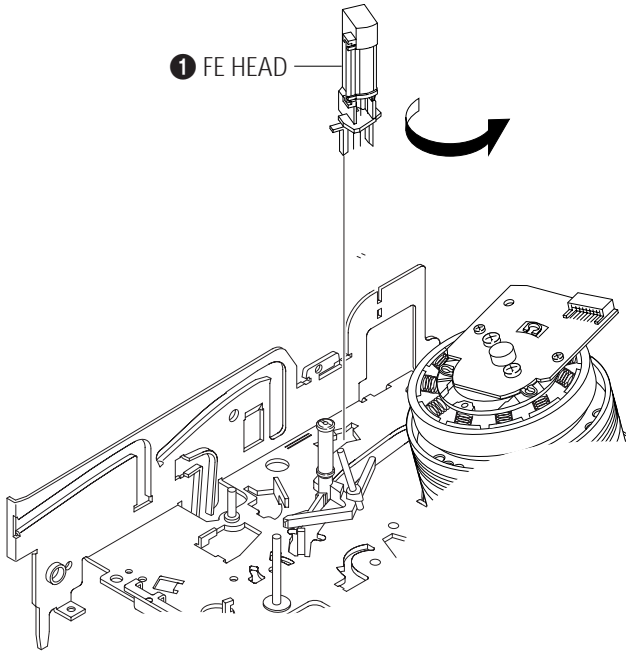


Fig. 4-34 FE Head Removal

4-4-22 ACE Head Removal

- 1) Pull out the FPC from connector of ACE Head Ass'y ❷.
- 2) Remove the screw ❶.
- 3) Lift the ACE Head Ass'y ❷.

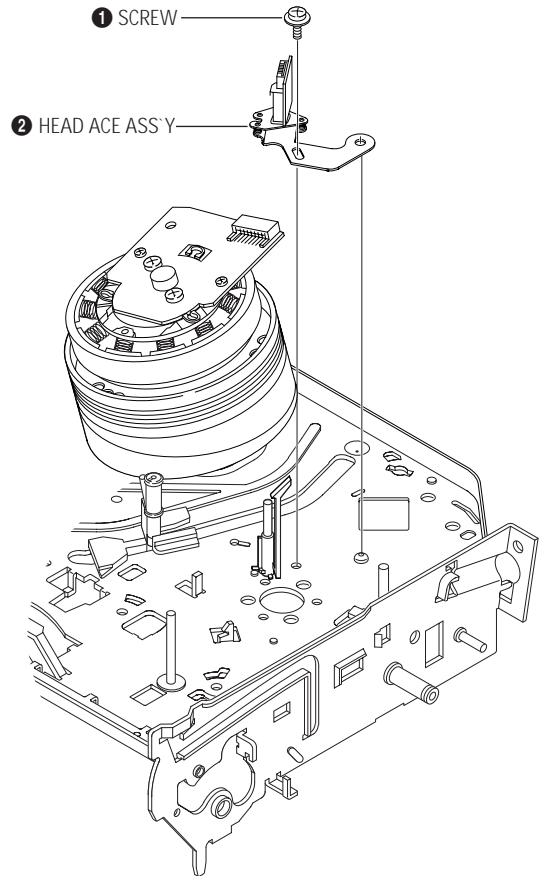


Fig. 4-35 ACE Head Removal

4-4-23 Slider S, T Ass'y Removal

- 1) Move the Slider S, T Ass'y ❶, ❷ to slot, and then lift it to remove. (Refer to arrow)

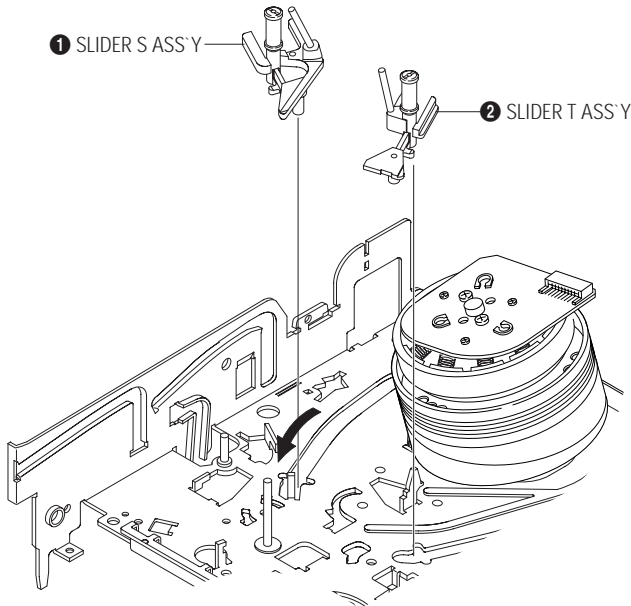


Fig. 4-36 Slider S, T Ass'y Removal

4-4-24 Plate Ground Deck, Cylinder Ass'y Removal

- 1) Remove the 3 Screws ❶.
- 2) Lift the Plate Ground Deck ❷.
- 3) Lift the Cylinder Ass'y ❸.

Assembly :

- 1) Match the 3 holes in the bottom of Cylinder ass'y ❸ to the 3 holes of Main Base as attending not to drop or knock the Cylinder ass'y ❸.
- 2) Tighten the 1 Screw ❶.
- 3) Match the Plate Ground Deck ❷ to the Hole of Base Main.
- 4) Tighten the other 2 Screws ❶.

Note :

- 1) Take care not to touch the Cylinder Ass'y ❸ and the tape guide post at reinstalling.
- 2) When reinstalling, Don't push down too much on Screw Driver.

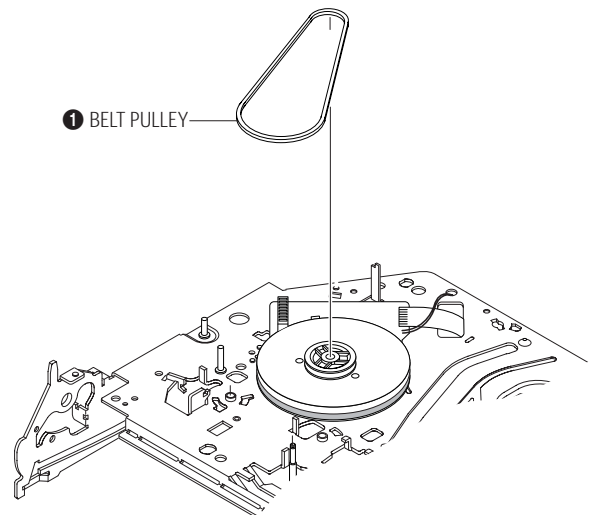


Fig. 4-37 Plate Ground Deck, Cylinder Ass'y Removal

4-4-25 Belt Pulley Removal

- 1) Remove the Belt Pulley ❶.

Note : Take extreme care not to get grease on Belt Pulley ❶ at assembling or reassembling.

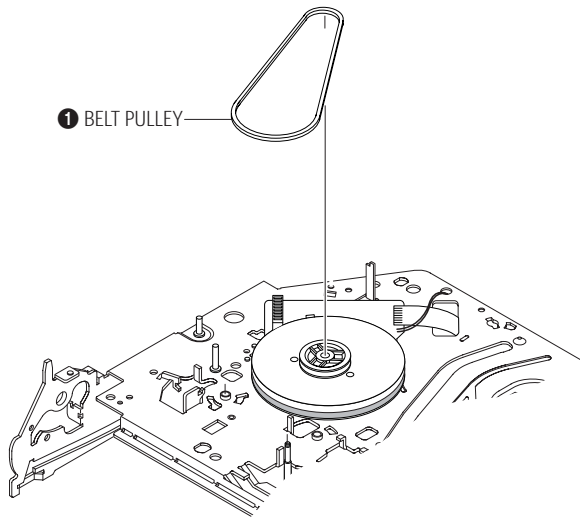


Fig. 4-38 Belt Pulley Removal

4-4-26 Damper Capstan Removal

- 1) Lift the Hook in the direction of arrow use the Flat Tip. (Refer to Fig. 4-39)
- 2) Rotate the Damper Capstan in the direction of allow

Note : Damper Capstan use the Sankyo Capstan Motor (FQVB65) Only.

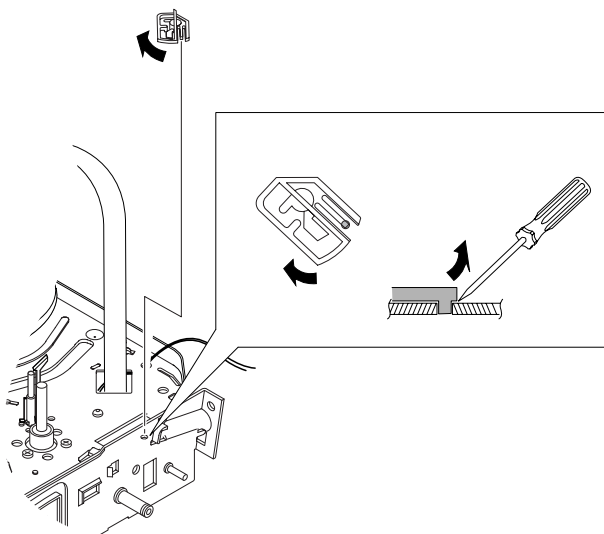


Fig. 4-39 Damper Capstan Removal

4-4-27 Motor Capstan Ass'y Removal

- 1) Remove the 3 Screws ❶.
- 2) Remove the Motor Capstan Ass'y ❷.

Assembly :

- 1) Match the 3 holes of Motor Capstan Ass'y ❷ to the 3 holes of Main Base. Be careful not to drop or knock the Motor Capstan Ass'y ❷.
- 2) Tighten the 3 Screws ❶ in the direction of arrow as shown detail drawing.

Note : After tightening screws, check if there is gap between the head of screws and the top side of Main Base. There should have no gap between the head of screws and the top side of Main Base. After reinstalling, adjusting the tape transport system again.

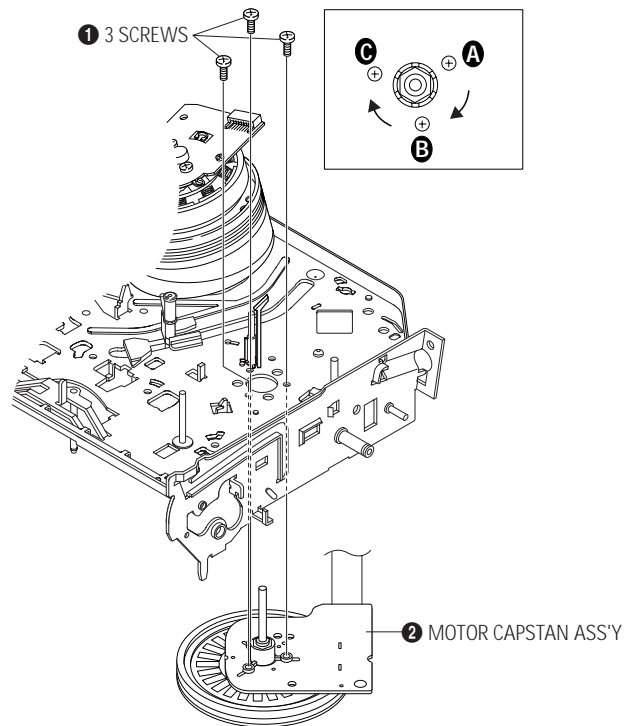


Fig. 4-40 Motor Capstan Ass'y Removal

4-4-28 Post #8 Guide Ass'y Removal

- 1) Rotate the Post #8 Guide Ass'y ❶ in the direction of arrow to lift up.



Fig. 4-41 Post #8 Guide Ass'y Removal

4-4-29 Level Head Cleaner Ass'y Removal (Optional)

- 1) Release the Hook ❶.
- 2) Lift the Lever Head Cleaner Ass'y ❷.

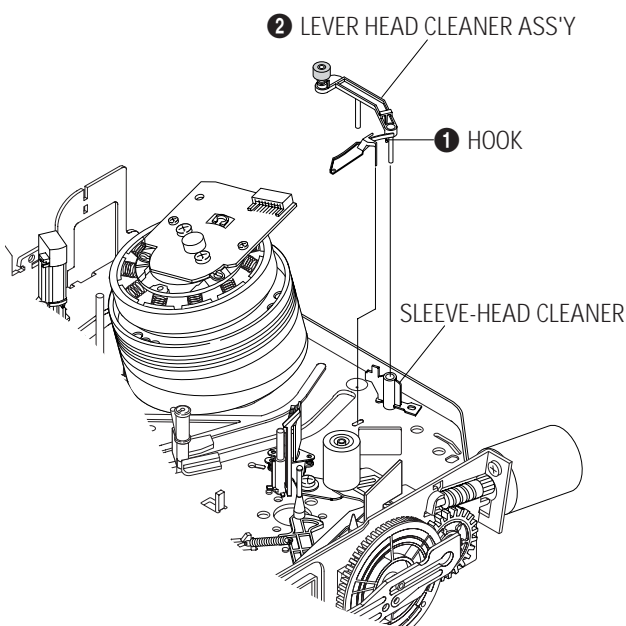


Fig. 4-42 Lever Head Cleaner Ass'y Removal

4-4-30 How to Eject the Cassette Tape (If the tape is stuck in the unit)

- 1) Turn the Gear worm ❶ clockwise with screw driver. (Refer to arrow)
(Other method : Remove the Screw of Motor Load Ass'y, Separate the Motor Load Ass'y)

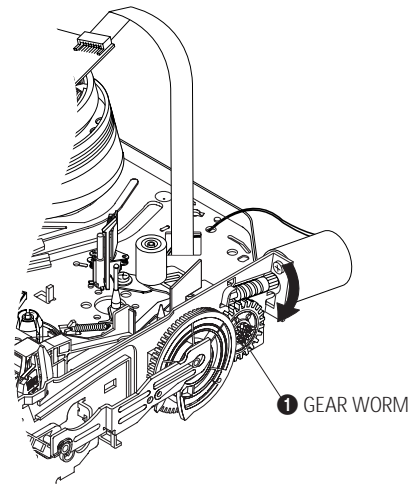


Fig.4-43

- 2) When Slider S,T are approached in the position of unloading, rotate holder Clutch counterclockwise after inserting screw driver in the hole of frame's bottom in order to wind the unwinded tape. (Refer to Fig.4-43)
(If you rotate Gear Worm ❶ continuously when tape is in state of unwinding, you may cause a tape contamination by grease and tape damage. Be sure to wind the unwinded tape in the state of set horizontally.)
- 3) Rotate Gear Worm ❶ clockwise using screw driver again up to the state of eject mode and then pick out the tape. (Refer to Fig.4-42)

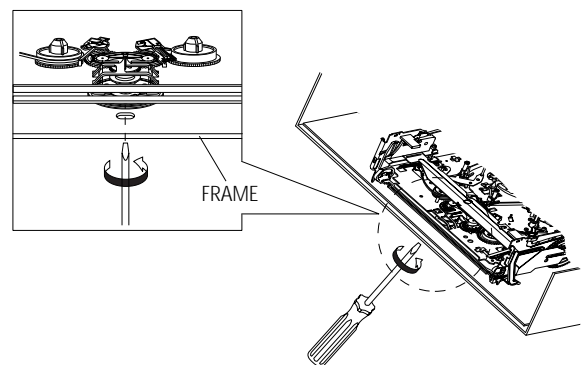


Fig. 4-44

4-5 The table of cleaning, Lubrication and replacement time about principal parts

- 1) The replacement time of parts is not life of parts.
- 2) The table 4-1 is that the VCR Set is in normal condition (normal temperature, normal humidity).
The checking period may be changed owing to the condition of use, runtime and environmental conditions.
- 3) Life of the Cylinder Ass'y is depend on the condition of use.
- 4) See exploded view for location of each parts.

<Table 4-1>

*	Parts Name	Checking Period										Remark
		500	1000	1500	2000	2500	3000	3500	4000	4500	5000	
T A P E P A T H S Y S T E M	POST TENSION	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	- To clean the parts, use patch and alcohol (solvent).
	SLANT POST S, T	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	
	#8 GUIDE SHAFT	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	
	CAPSTAN SHAFT	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	- After cleaning, use the video tape after alcohol is gone away completely.
	#9 GUIDE POST	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	
	#3 GUIDE POST	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	
	GUIDE ROLLER S, T	Δ	Δ	Δ	O	O	O	O	O	O	O	- We recommend to use oil [EP-50] or solvent.
	CYLINDER ASS'Y	Δ	O	O	O	O	O	O	O	O	O	
	FE HEAD	Δ	Δ	Δ	O	O	O	O	O	O	O	
	ACE HEAD	Δ	O	O	O	O	O	O	O	O	O	- One or two drops of oil should be applied after cleaning with alcohol.
	PINCH ROLLER	Δ	O	O	O	O	O	O	O	O	O	
	POST REEL S, T		◆		◆		◆		◆		◆	
	SLEEVE TENSION		◆		◆		◆		◆		◆	- Periodic time of applying oil (Apply oil after cleaning) - The excessive applying oil may be the cause of malfunction.
	POST CENTER		◆		◆		◆		◆		◆	
	LEVER IDLE BOSS (2Point)		◆		◆		◆		◆		◆	
D R I V I N G S Y S T E M	CAPSTAN MOTOR PULLEY	Δ	Δ	Δ	Δ	Δ	O	O	O	O	O	
	BELT PULLEY				O	O	O	O	O	O	O	
	HOLDER CLUTCH ASS'Y	Δ	O	O	O	O	O	O	O	O	O	
	GEAR CENTER ASS'Y		O	O	O	O	O	O	O	O	O	
	GEAR IDLE (2Point)		O	O	O	O	O	O	O	O	O	
	LOADING MOTOR		O	O	O	O	O	O	O	O	O	
B R A K E S Y S T E M	BAND BRAKE ASS'Y		O	O	O	O	O	O	O	O	O	
	BRAKE T ASS'Y		O	O	O	O	O	O	O	O	O	

Δ : Cleaning

O : Check and replacement in necessary

◆ : Add Oil

4-6 DVD Deck

4-6-1 Holder Chuck Removal

- 1) Push 4 Hooks ❶ in the direction of arrow "A" and lift up the Holder Chuck ❷.

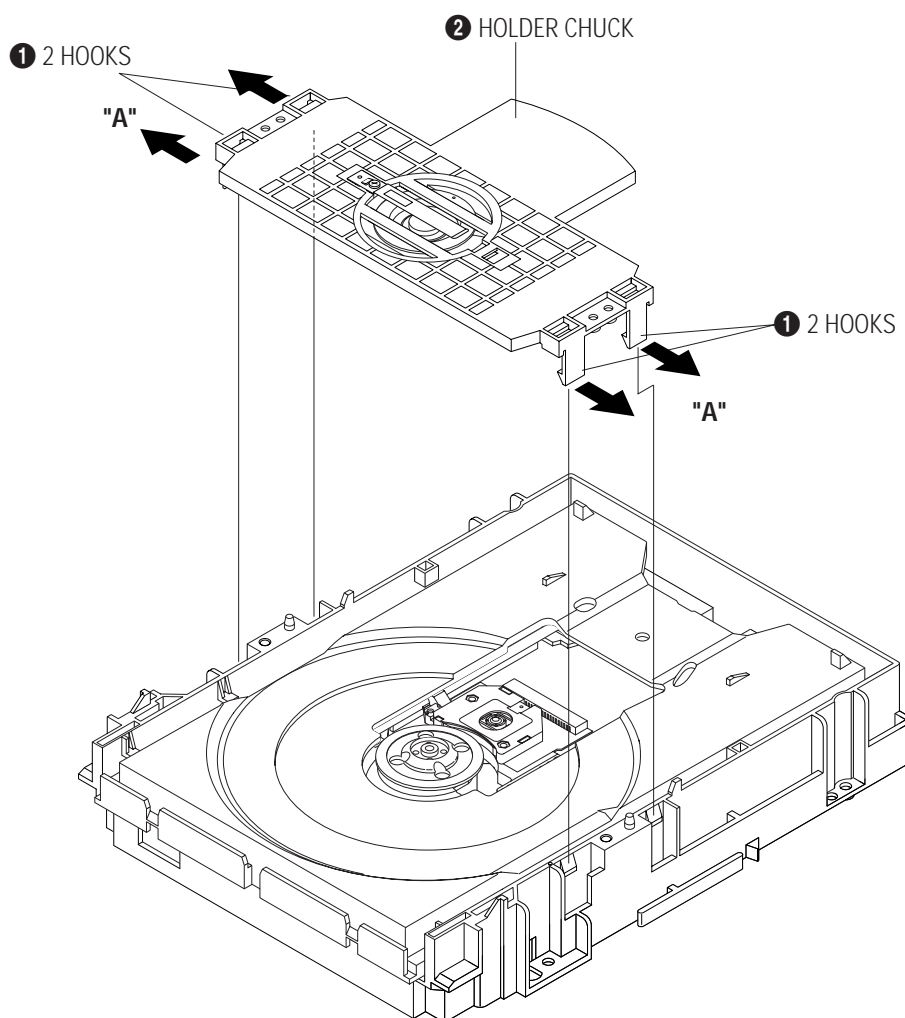


Fig. 4-45 Holder Chuck Removal

4-6-2 Tray Disc Removal

- 1) Insert a Screw Driver **1** into Emergency Hole **2** and push the Slider Housing **3** in the direction arrow "A".
- 2) When the Tray Disc **4** comes out a little, pull it in the direction arrow "B" by hand.

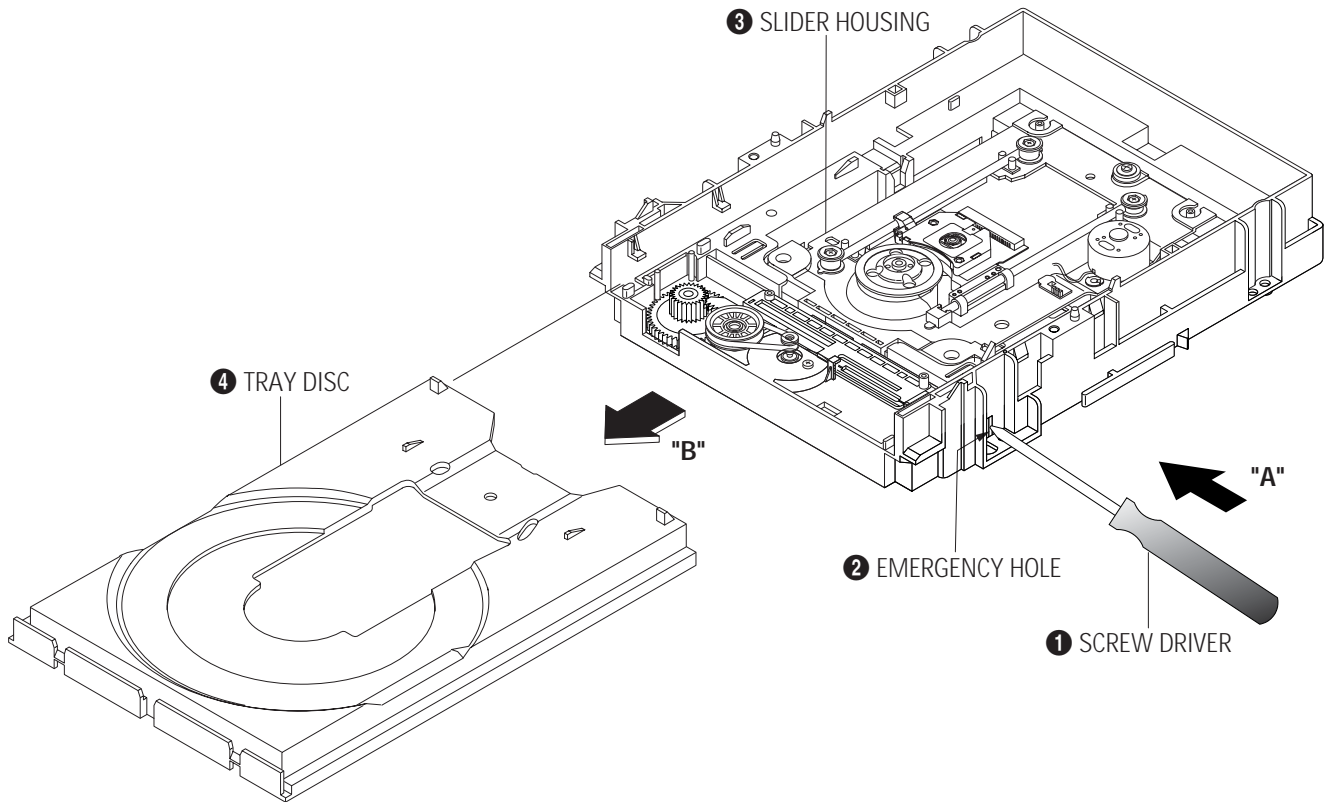


Fig.4-46 Tray Disc Removal

4-6-3 Assy P/U Deck Removal

- 1) Remove the 4 Soldering ❶ (SL+, SL-, SP+, SP-).
- 2) Remove the 1 Screw ❷ and lift up the Assy P/U Deck ❸

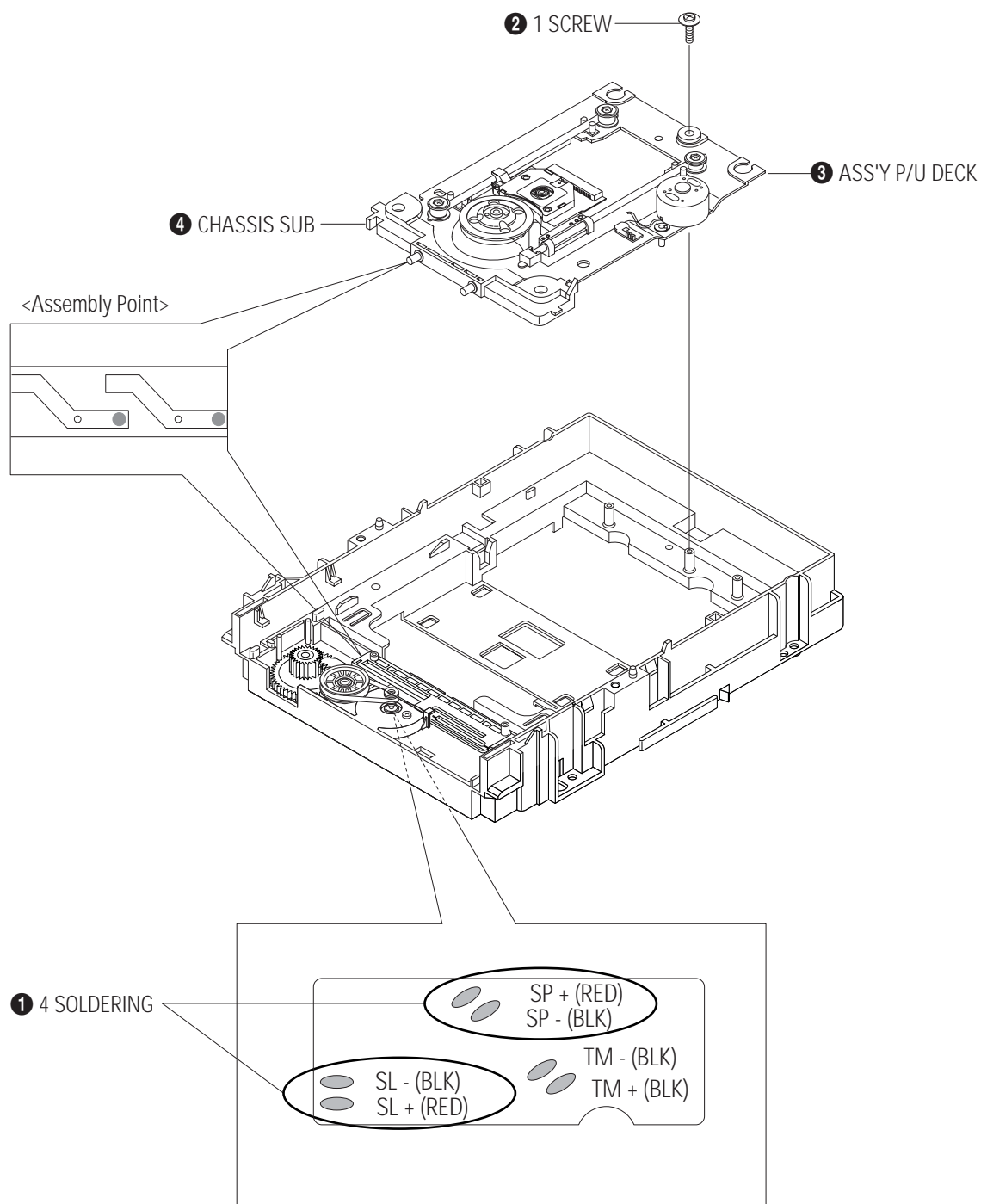


Fig. 4-47 Assy P/U Deck Removal

4-6-4 Ass'y Housing Removal

- 1) Remove the 2 Soldering ❶. (TM+, TM-)
- 2) Push the 2 Hooks ❷ in the direction of arrow "A" and remove Ass'y PCB Deck ❸.
- 3) Push the Slider Housing ❹ in the direction arrow "B".
- 4) Push the 1 Hook ❺ in the direction of arrow "C" and lift up the Slider Housing ❹.
- 5) Remove the Belt Pulley ❻ and 2 Screws ❼, Ass'y Motor Load ❽.
- 6) Push the 1 Hook ❾ in the direction of arrow "D" and lift up the Gear Pulley ❿, Gear Tray ⓫.

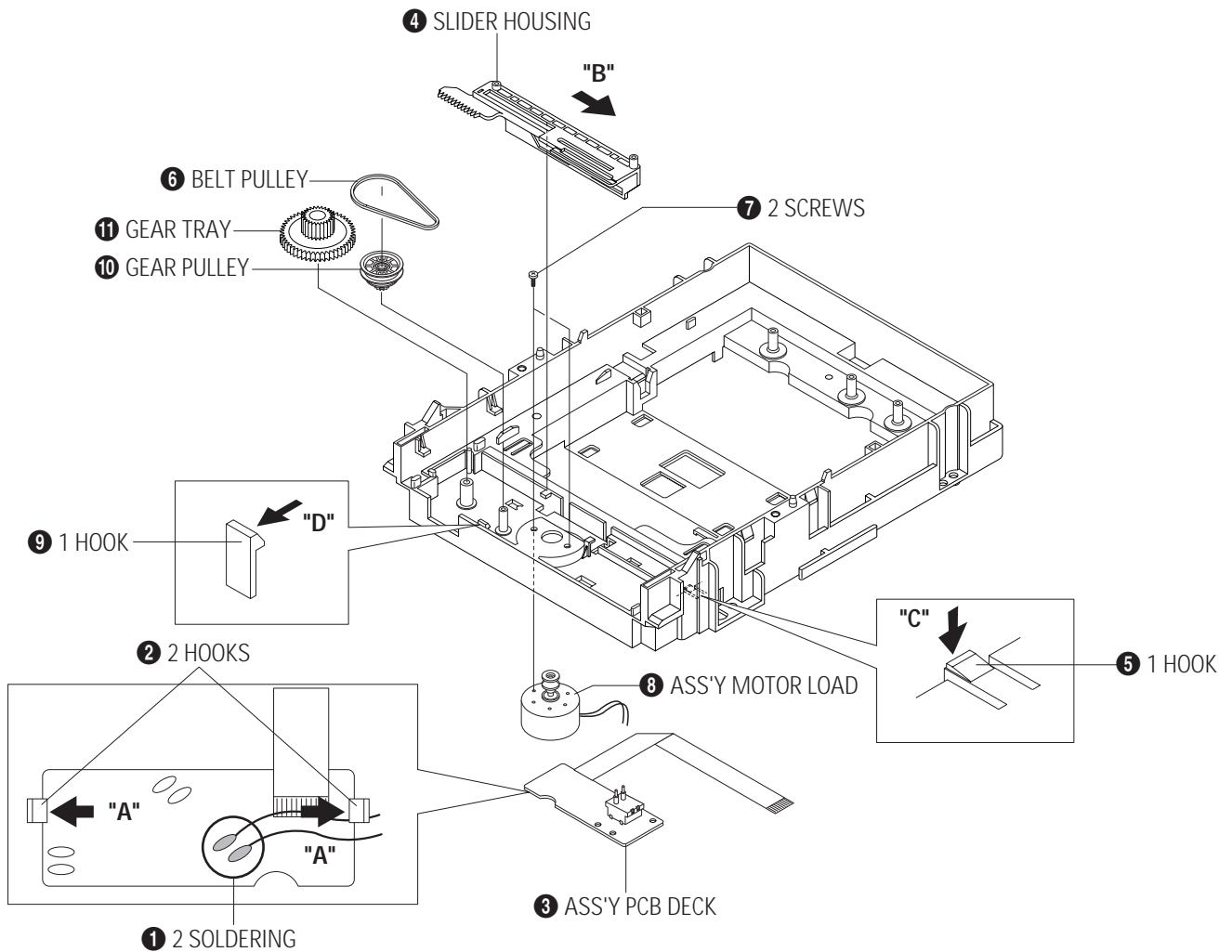


Fig 4-48 Ass'y Housing Removal

4-6-5 Ass'y Bracket Deck Removal

- 1) Push the Hook ❶ in the direction of arrow "A" and lift up the Gear Feed B ❷.
- 2) Push the Hook ❸ in the direction of arrow "B" and lift up the Gear Feed A ❹.
- 3) Remove the 2 Screws ❺ and lift up Motor Feed Ass'y ❻.
- 4) Remove the 2 Screws ❼ and lift down Motor Spindle Ass'y ❽.
- 5) Remove the 3 Screws ❾ and remove 3 Holder Cam Skew ❿, Shaft Pick Up ⓫, Ass'y Pick Up ⓬.
- 6) Remove the 1 Screws ⓭ and remove Gear Back Lash ⓮.

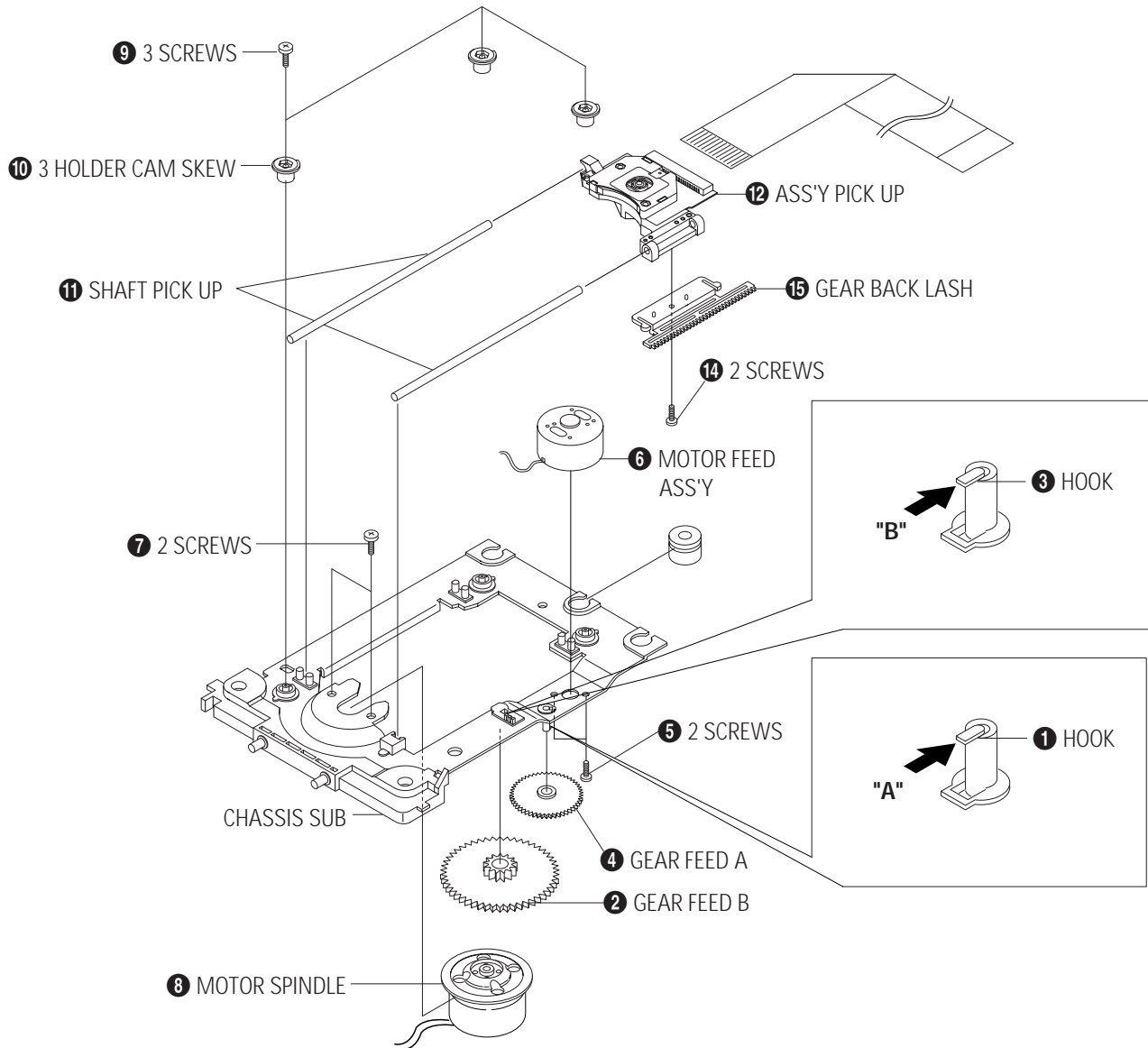


Fig. 4-49 Ass'y Bracket Deck Removal

3. Alignment and Adjustments

3-1 VCR Adjustment

3-1-1 Reference

- 1) X-Point (Tracking center) adjustment, "Head switching adjustment" and "NVRAM option setting" can be adjusted with remote control.
- 2) When replacing the Main PCB Micom (IC601) and NVRAM (IC603 ; EEPROM) be sure to adjust the "Head switching adjustment" and "NVRAM option setting".
- 3) When replacing the cylinder ass'y, be sure to adjust the "X-Point" and "Head switching adjustment".
- 4) How to adjust.
 - Intermittently short-circuit the Test Point on Main PCB with pincers to the adjustment mode.
 - If the corresponding adjustment button is pressed, the adjustment is performed automatically.
 - When the adjustment is completed, be sure to turn the power off.

3-1-1(a) Location of adjustment button of remote control

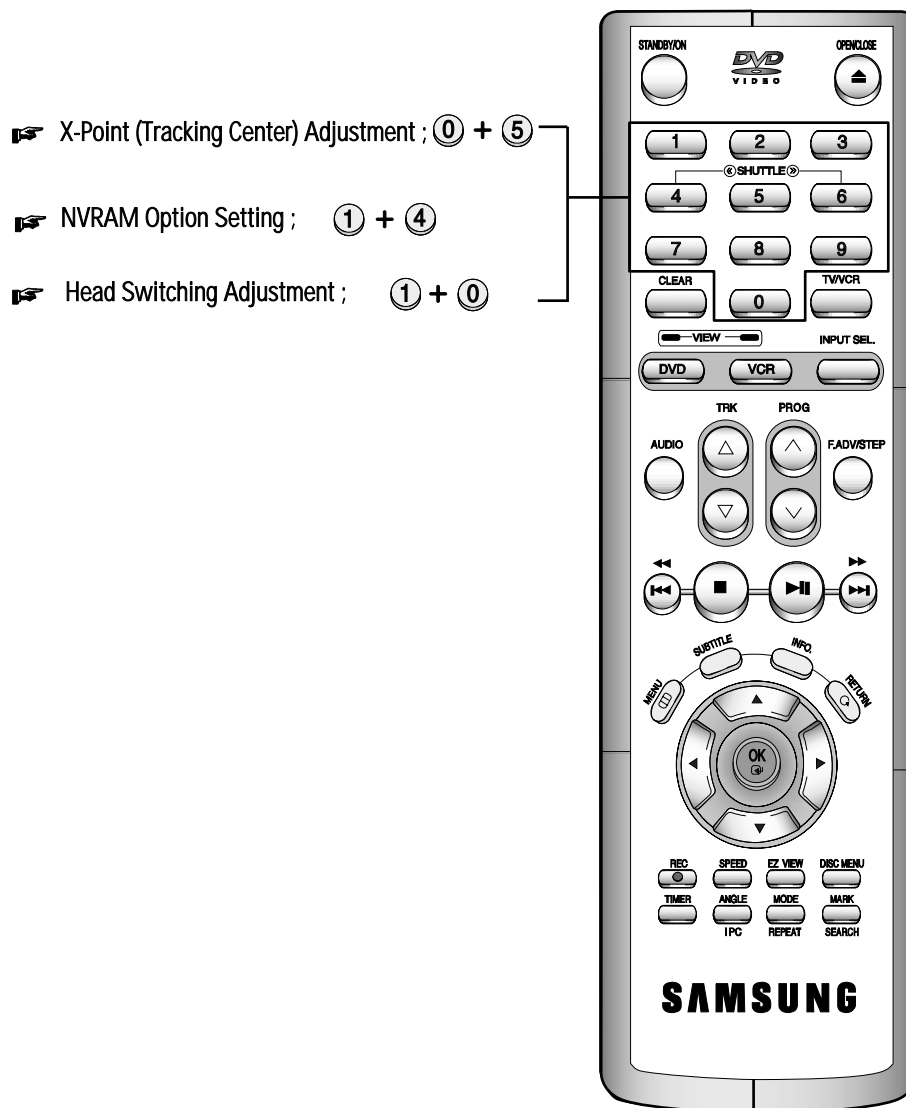


Fig. 3-1

3-1-1(b) TEST location for adjustment mode setting

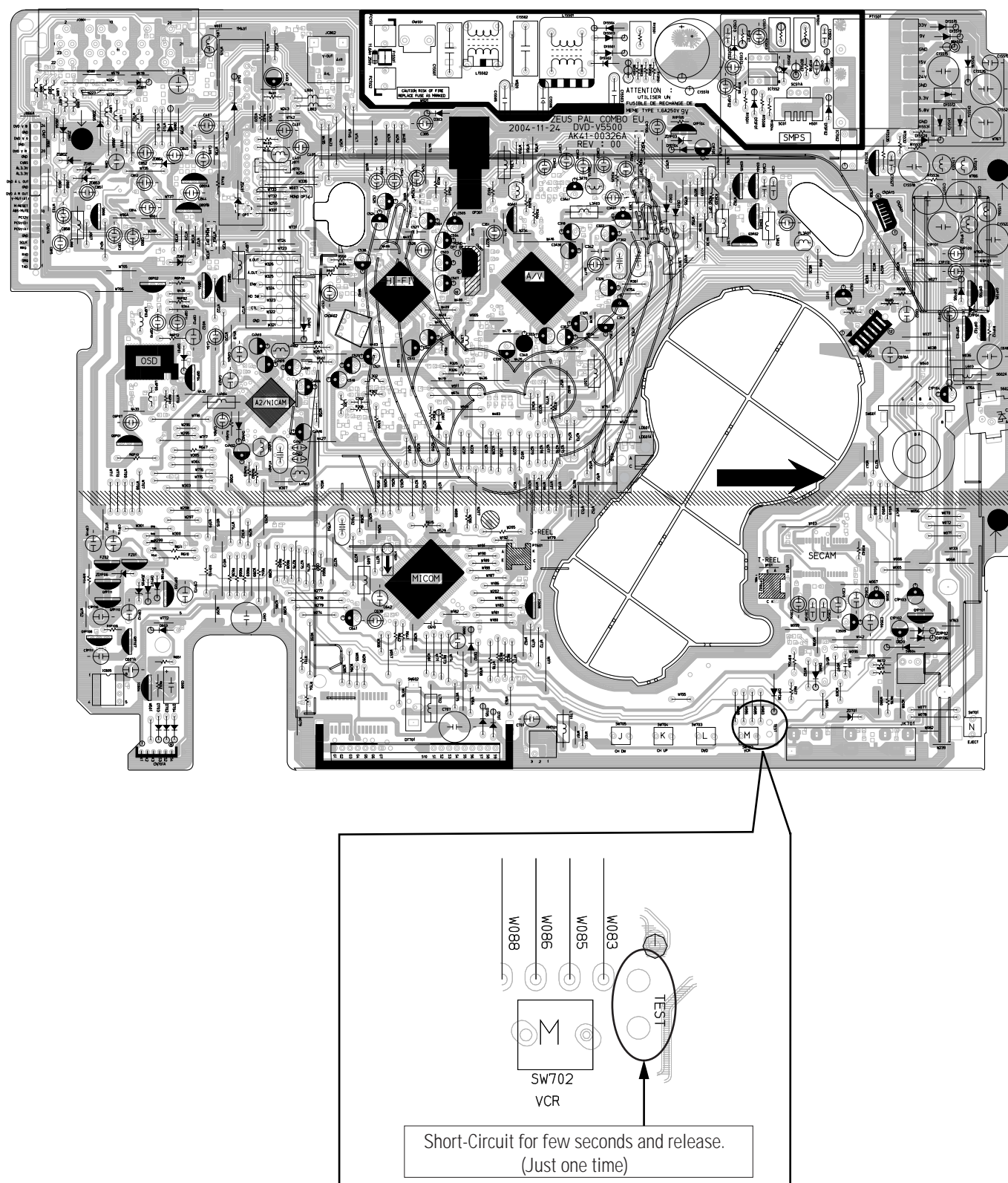


Fig. 3-2 VCR Main PCB (Top View)

3-1-2 Head Switching Point Adjustment

- 1) Playback the alignment tape.
- 2) Intermittently short-circuit the two Test Points on VCR Main PCB while setting the adjustment mode. (See Fig. 3-2)
- 3) Press the “1, 0” buttons; remote control adjustment operates automatically. (See Fig. 3-1)

3-1-3 NVRAM Option Setting

- 1) NVRAM Option is adjusted in the factory.
- 2) In case Main PCB Micom (IC601) and NVRAM (IC603 ; EEPROM) are replaced, be sure to set the corresponding option number of the required model. (If the option is not set, the unit will not operate.)

- 1) Intermittently short-circuit the two Test Points on VCR Main PCB. (See Fig. 3-2)
- 2) Press the “1, 4” button on the remote control. The option setting appears. (See Fig. 3-3)
- 3) Select the option number (See table 3-1) of corresponding model with “◀, ▶, ▲, ▼” buttons on the remote control.
- 4) After selecting the option number is completed, press the “▲” button of remote control.
(If “▲” button is pressed, the selected number is changescolor. ; See Fig. 3-4)
- 5) Press the “ENTER” button of remote control again to store the option number.
- 6) Turn the Power off.

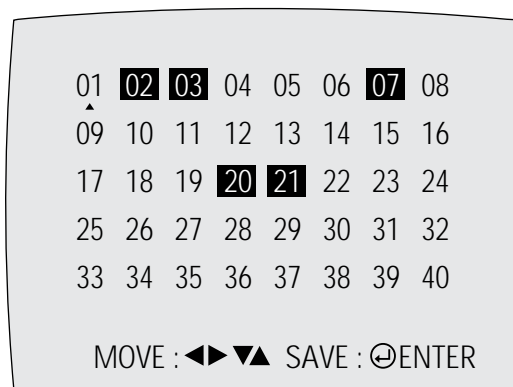


Fig.3-3

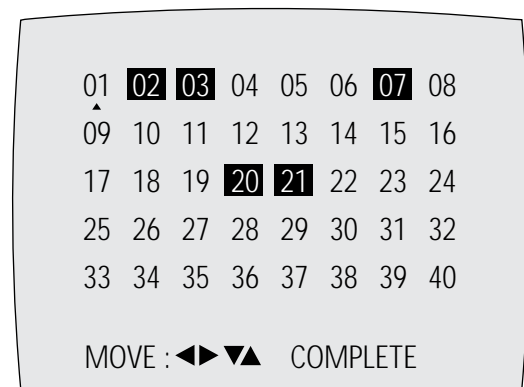


Fig.3-4

<Table 3-1 NVRAM Option Table>

MODEL	OPTION NUMBERS
DVD-V5450/XEF	4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 16, 18, 20, 21, 26, 33, 34, 35, 36, 38, 40, 47, 48, 50, 58, 61, 63, 65, 69, 72
DVD-V5450/XEB	4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 16, 18, 20, 21, 26, 33, 34, 35, 36, 38, 40, 42, 47, 48, 50, 58, 61, 63, 65, 69, 72
DVD-V5450/XEU	4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 18, 25, 26, 34, 38, 40, 41, 47, 48, 50, 58, 61, 63, 65, 69, 72
DVD-V5450/XEN	4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 16, 18, 34, 36, 38, 40, 42, 47, 48, 50, 58, 61, 63, 65, 69, 72
DVD-V5450/XEC	4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 16, 18, 34, 36, 38, 40, 42, 47, 48, 50, 58, 61, 63, 65, 69, 72
DVD-V5450/XEE	4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 16, 18, 34, 36, 38, 40, 42, 47, 48, 50, 58, 61, 63, 65, 69, 72
DVD-V5450/XEG	4, 5, 6, 7, 9, 10, 11, 12, 13, 16, 17, 18, 34, 36, 38, 40, 42, 47, 48, 50, 58, 61, 63, 65, 69, 72
DVD-V5450/COM	4, 5, 6, 7, 9, 10, 11, 12, 13, 16, 18, 34, 36, 38, 40, 42, 47, 48, 50, 58, 61, 63, 65, 69, 72
DVD-V5450/EUR	4, 6, 7, 8, 9, 10, 11, 12, 13, 16, 17, 18, 20, 33, 34, 36, 38, 42, 47, 48, 50, 58, 61, 63, 65, 69, 72
DVD-V5450/XEO	4, 6, 7, 8, 9, 10, 11, 12, 13, 16, 17, 18, 20, 33, 34, 36, 38, 42, 47, 48, 50, 58, 61, 63, 65, 69, 72
DVD-V5450/XEH	4, 6, 7, 8, 9, 10, 11, 12, 13, 16, 17, 18, 20, 33, 34, 36, 38, 42, 47, 48, 50, 58, 61, 63, 65, 69, 72
DVD-V5350/XET	4, 5, 6, 7, 9, 10, 11, 12, 13, 16, 18, 34, 36, 38, 40, 42, 47, 48, 50, 58, 61, 63, 65, 69, 72
DVD-V5500/XEH	4, 6, 7, 8, 9, 10, 11, 12, 13, 15, 16, 17, 18, 20, 33, 34, 36, 38, 42, 47, 48, 49, 50, 51, 58, 61, 63, 65, 69, 72
DVD-V6400/XEF	2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 16, 17, 18, 20, 21, 26, 33, 34, 35, 36, 38, 40, 42, 44, 47, 48, 50, 58, 61, 63, 65, 69, 72
DVD-V6400/XEU	3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 17, 18, 25, 26, 34, 38, 40, 41, 44, 47, 48, 50, 58, 61, 63, 65, 69, 72
DVD-V6400/XEN	2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 16, 17, 18, 34, 36, 38, 40, 42, 44, 47, 48, 50, 58, 61, 63, 65, 69, 72
DVD-V6400/XEC	2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 16, 17, 18, 34, 36, 38, 40, 42, 44, 47, 48, 50, 58, 61, 63, 65, 69, 72
DVD-V6400/XEE	2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 16, 17, 18, 34, 36, 38, 40, 42, 44, 47, 48, 50, 58, 61, 63, 65, 69, 72
DVD-V6400/XEG	2, 4, 5, 6, 7, 9, 10, 11, 12, 13, 16, 17, 18, 34, 36, 38, 40, 42, 44, 47, 48, 50, 58, 61, 63, 65, 69, 72
DVD-V6400/COM	2, 4, 5, 6, 7, 9, 10, 11, 12, 13, 16, 17, 18, 34, 36, 38, 40, 42, 44, 47, 48, 50, 58, 61, 63, 65, 69, 72
DVD-V6400/XET	2, 4, 5, 6, 7, 9, 10, 11, 12, 13, 16, 17, 18, 34, 36, 38, 40, 42, 44, 47, 48, 50, 58, 61, 63, 65, 69, 72
DVD-V6400/EUR	2, 4, 6, 7, 8, 9, 10, 11, 12, 13, 16, 17, 18, 20, 33, 34, 36, 38, 42, 44, 47, 48, 50, 58, 61, 63, 65, 69, 72
DVD-V6400/XEO	2, 4, 6, 7, 8, 9, 10, 11, 12, 13, 16, 17, 18, 20, 33, 34, 36, 38, 42, 44, 47, 48, 50, 58, 61, 63, 65, 69, 72
DVD-V6400/XEH	2, 4, 6, 7, 8, 9, 10, 11, 12, 13, 16, 17, 18, 20, 33, 34, 36, 38, 42, 44, 47, 48, 50, 58, 61, 63, 65, 69, 72

MODEL	OPTION NUMBERS
DVD-V6400/XEB	2, 4, 6, 7, 8, 9, 10, 11, 12, 13, 16, 17, 18, 20, 21, 26, 33, 34, 35, 36, 38, 40, 42, 44, 47, 48, 50, 58, 61, 63, 65, 69, 72
DVD-V6450/XET	2, 4, 5, 6, 7, 9, 10, 11, 12, 13, 16, 17, 18, 34, 36, 38, 40, 42, 44, 47, 48, 50, 58, 61, 63, 65, 69, 72
DVD-V6500/XEH	2, 4, 6, 7, 8, 9, 10, 11, 12, 13, 15, 16, 17, 18, 20, 33, 34, 36, 38, 42, 44, 47, 48, 49, 50, 51, 58, 61, 63, 65, 69, 72

3-2 DVD Adjustment

3-2-1 Location of Test Point

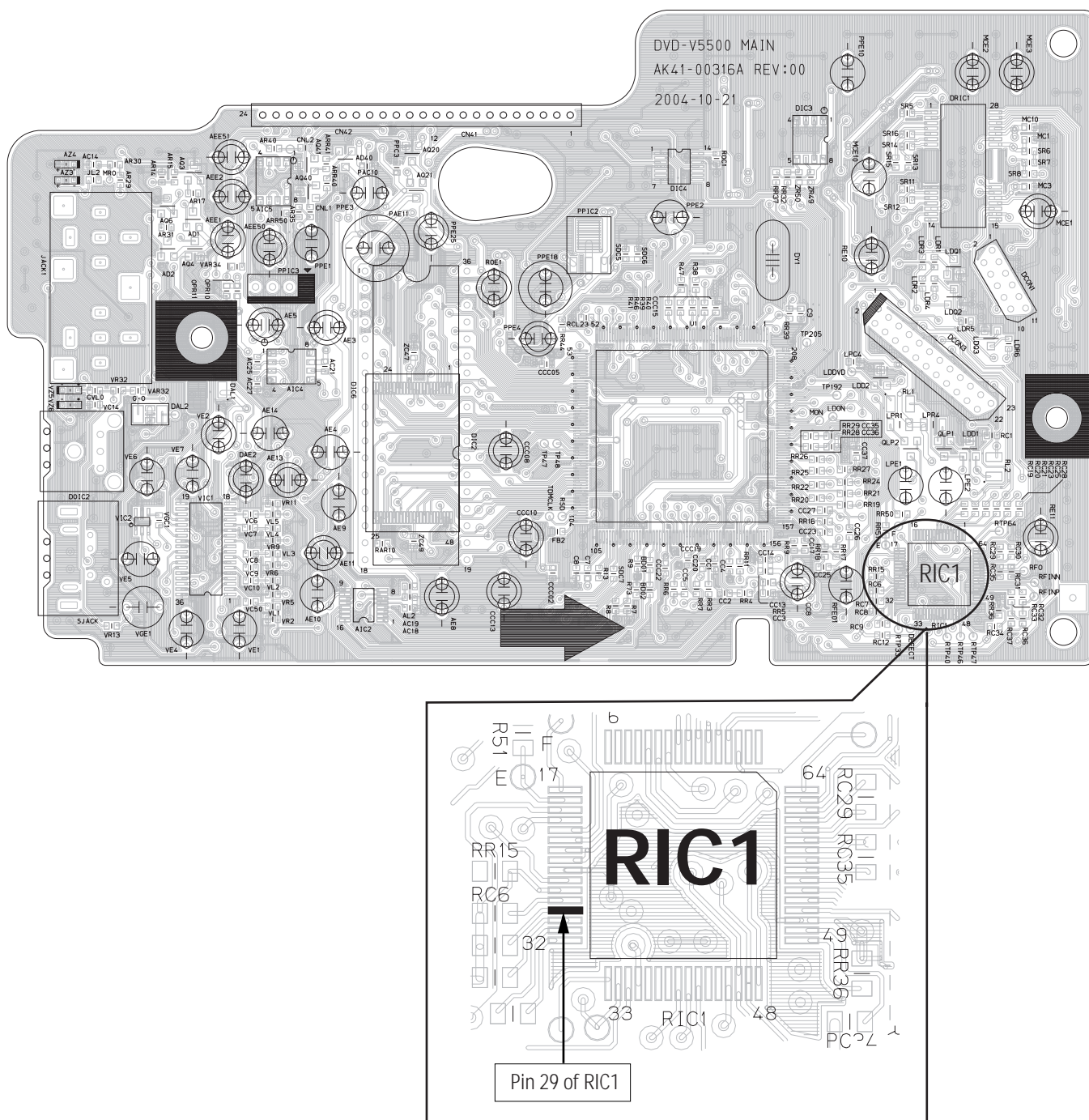


Fig. 3-5 Location of test Point (Main PCB - Top Side)

3-2-2 Skew Adjustment

3-2-2(a) Adjustment Spec. and Test Point

<Table 3-2>

◆ Test Disc ; Service not Available

Test Disc	Adjustment Spec.	Test Point	Adjustment Location
TDV-533 Chapter 14	Flat Waveform	"Pin 29 of RIC1" (DVD Main PCB - Top Side) (See Fig. 3-5)	Ass'y Deck - Top Side (See Fig. 3-6)

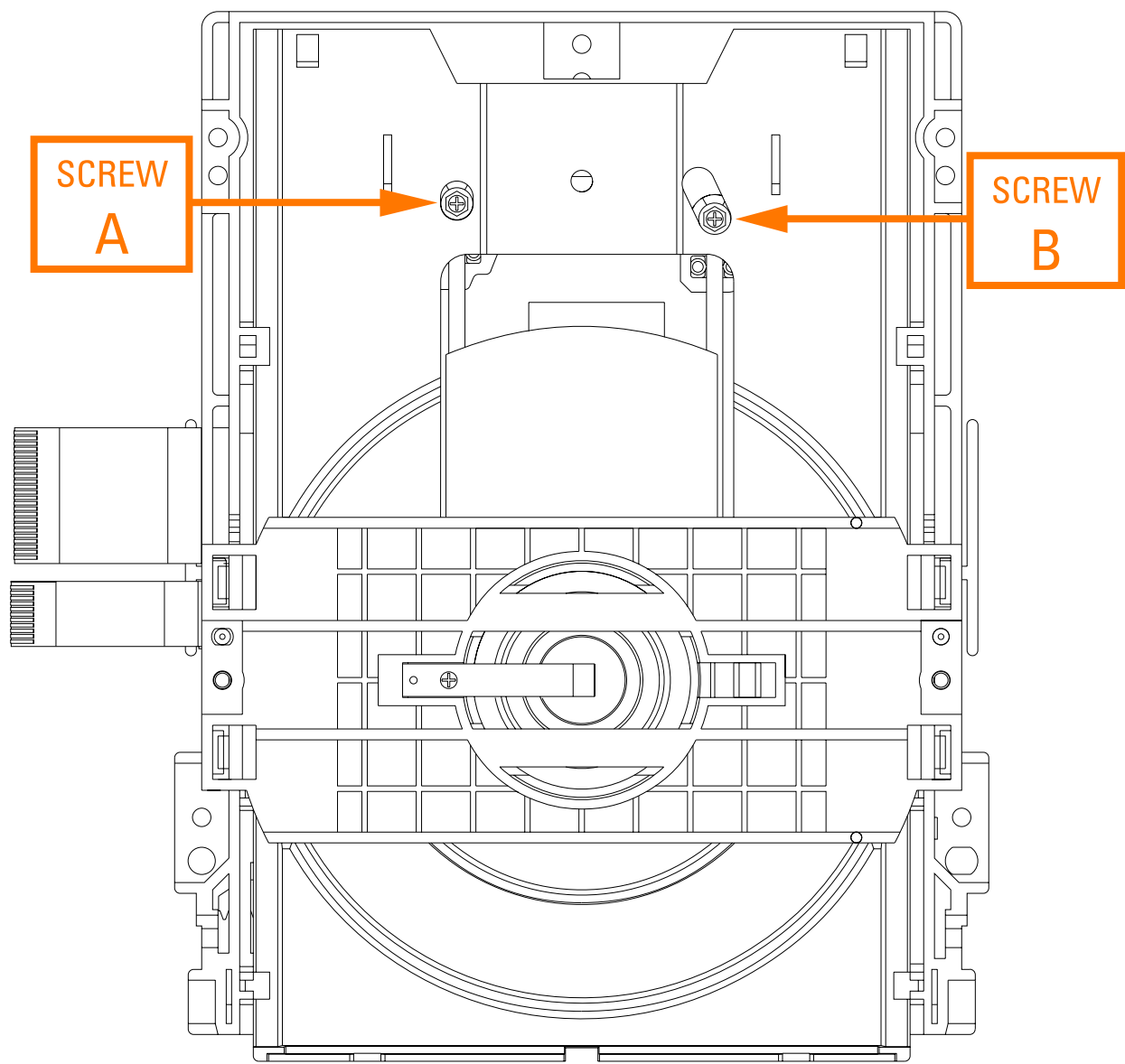


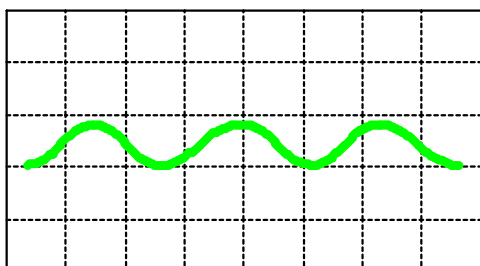
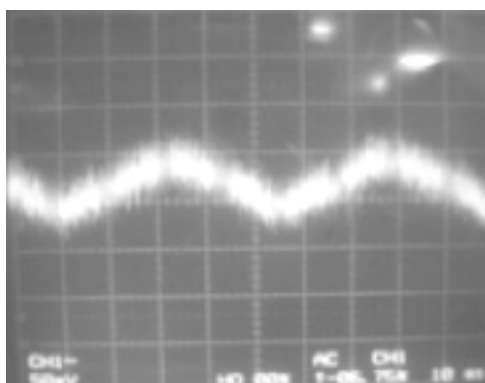
Fig.3-6 Ass'y Deck (Top Side)

3-2-2(b) SKEW Adjustment Method

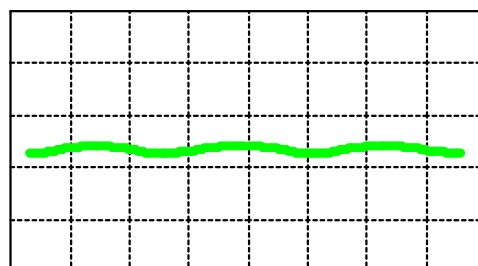
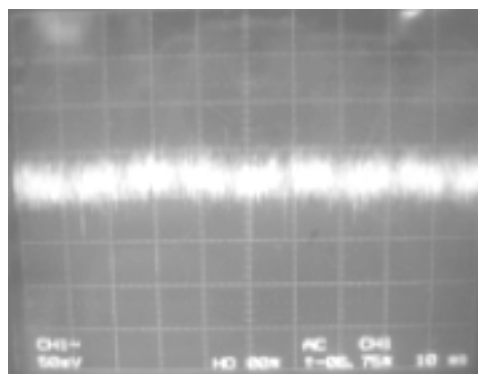
Needed to minimize the variations in Skew of the Pickup unit and to provide optimum match with the recorded signal on the Disc.

- 1) Connect an Oscilloscope to the "Pin 29 of RIC1" Test Point (See Fig. 3-5).
 - 2) Connect Power, Open the Tray and Play Ch.14 Which is in the TDV-533 Disc.
 - ◆ Set the Oscilloscope Range as follows :
(Voltage ; 50mV/Div., Frequency ; 10m Sec.)
 - 3) Adjust the Screws "A" and "B" (See Fig. 3-6) using a Hex screwdriver until you obtain a Flat Waveform and the picture is stable.
- Then, go to Chapter 1 and make sure the Waveform is Flat here as well.
If not, you have to go back to Chapter 14 and adjust again.
If you cannot obtain a Flat waveform, then the unit is defective.

Note : The Deck must be in a horizontal position. Use both "A" and "B" screws to adjust.



Typical Waveform before Adjustment



Waveform after Correct Adjustment

Fig. 3-7 Envelope Waveform

3-3 VCR Mechanical Adjustment

3-3-1 Tape Transport System and Adjustment Locations

The tape transport system has been adjusted precisely in the factory. Alignment is not necessary except for the following :

- 1) Noise observed on the screen.
- 2) Tape damage.
- 3) Parts replacement in the tape transport system.

Lower flange height of tape guide is used as the reference for the transport adjustment.

To maintain the height of the tape guide and prevent damage, do not apply excessive force onto the main base.

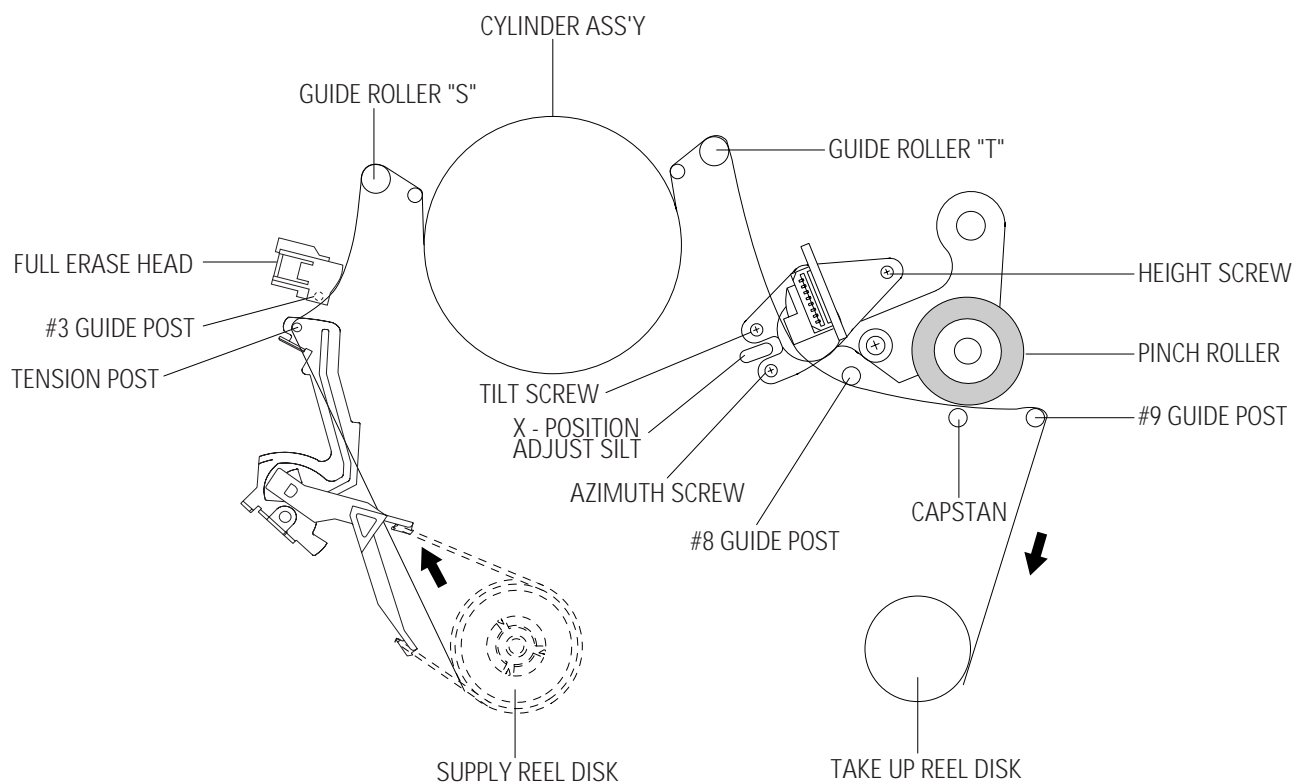


Fig. 3-8 Location of Tape Transport Adjustment

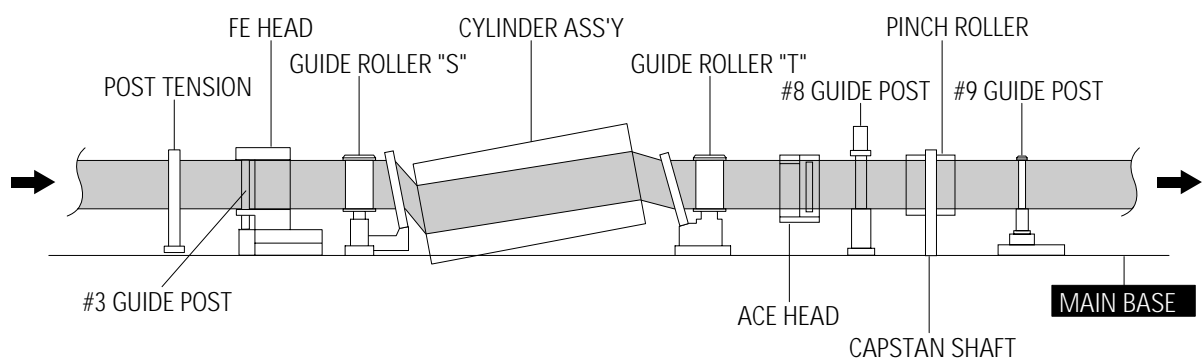


Fig. 3-9 Tape Travel Diagram

3-3-2 Tape Transport System Adjustment

When parts are replaced, perform the required adjustments by referring to procedures for the tape transport system. If there are any changes to the tape path, first run a T-120 tape and make sure excessive tape wrinkle does not occur at the tape guides.

- ◆ If tape wrinkle is observed at the guide roller S, T, turn the guide roller S, T until wrinkle disappears.
- ◆ If the tape wrinkle is still observed at the tape guide, perform the tilt adjustment of the ACE head.

(1) ACE Head Assembly Adjustment

a. ACE HEAD HEIGHT ADJUSTMENT

- 1) Run the alignment tape (Color bar) in the playback mode.
- 2) Observe surface of the audio head using a dental mirror.
- 3) Turn screw (C) clockwise or counterclockwise until the gap of lower tape edge and the lower edge of the control head is about 0.25mm. (Refer to Fig. 3-10 and 3-11)

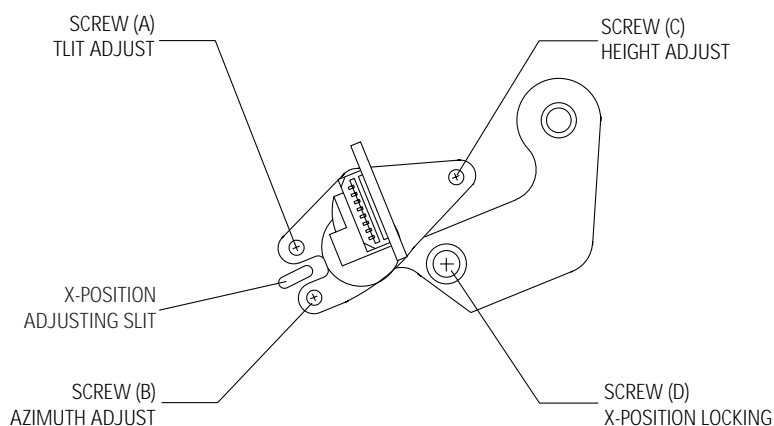


Fig. 3-10 Location of ACE Head Adjustment Screw

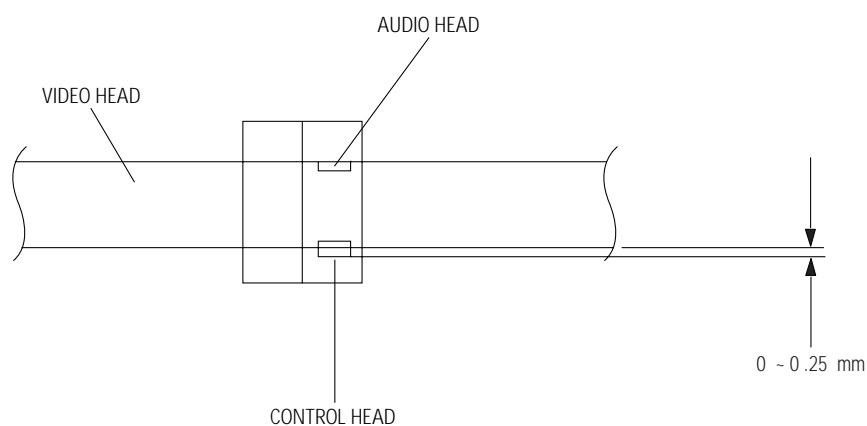


Fig. 3-11 ACE Head Height Adjustment

b. ACE HEAD TILT ADJUSTMENT

- 1) Playback a blank tape and observe the position of the tape at the lower flange of tape guide.
- 2) Confirm that there is no curl or wrinkle at the lower flange of tape guide as shown in Fig. 3-12 (B).
- 3) If a curl or wrinkle of the tape occurs, slightly turn the screw (A) tilt adjust on the ACE head ass'y.
- 4) Reconfirm the ACE head height.

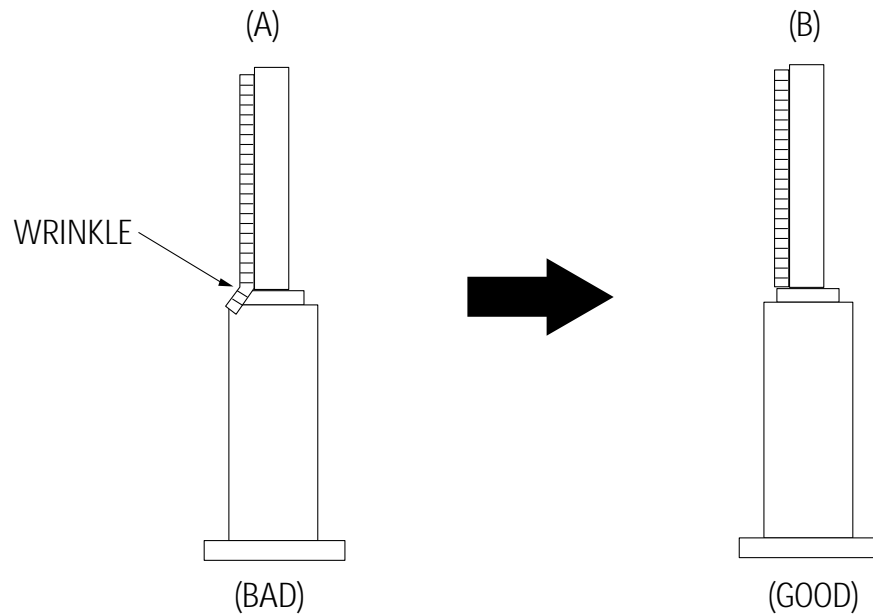


Fig. 3-12 Tape Guide Check

c. AUDIO AZIMUTH ADJUSTMENT

- 1) Load alignment tape (Mono scope) and playback the 7KHz signal.
- 2) Connect channel-1 scope probe to audio output.
- 3) Adjust screw (B) to achieve maximum audio level. (See Fig. 3-10)

d. ACE HEAD POSITION (X-POINT) ADJUSTMENT

- 1) Playback the alignment tape (Color bar)
- 2) Intermittently short-circuit the two Test Points on VCR Main PCB. (See Fig. 3-2)
- 3) Press the "0, 5" remote control buttons, then adjustment is operates automatically. (See Fig. 3-1)
- 4) Connect the CH-1 probe to "Envelope" the CH-2 probe to "H'D switching pulse" and then trigger to CH-1.
- 5) Insert the (-) driver into the X-Point adjustment hole and adjust it so that envelope waveform is maximum.

Test point :	TP2 (Audio Output)
	TP3 (Envelope)
	TP4 (H'D S/W -Trigger)
	TP5 (Control Pulse)

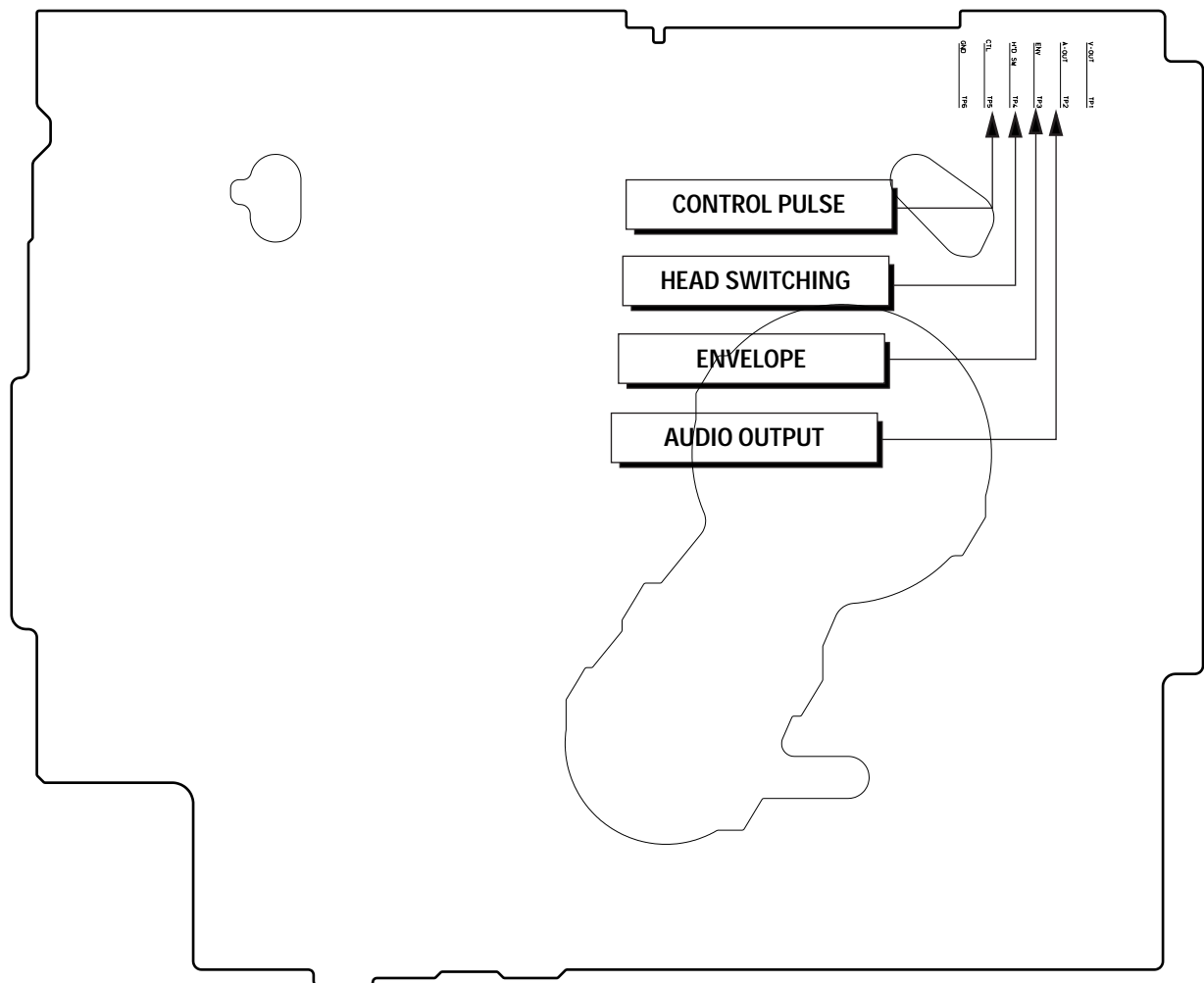


Fig. 3-13 Location of Test point (VCR Main PCB-Top View)

(2) Linearity adjustment (Guide roller S, T adjustment)

- 1) Playback the Mono Scope alignment tape (SP mode).
- 2) Observe the video envelope signal on an oscilloscope (triggered by the video switching pulse).
- 3) Make sure the video envelope waveform (at its minimum) meets the specification shown in Fig. 3-14.
If it does not, adjust as follows :

Note :

a=Maximum output of the video RF envelope.

b=Minimum output of the video RF envelope at the entrance side.

c=Minimum output of the video RF envelope at the center point.

d=Maximum output of the video RF envelope at the exit side.

- 4) If the section A in Fig. 3-15 does not meet the specification, adjust the guide roller S up or down.
- 5) If the section B in Fig. 3-15 does not meet the specification, adjust the guide roller T up or down.

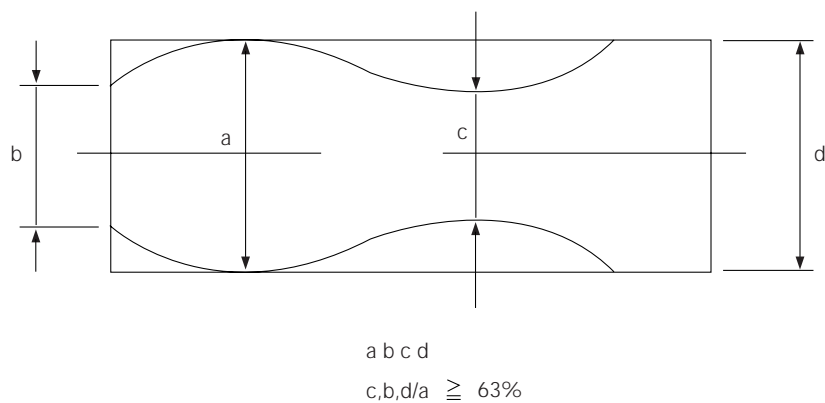


Fig. 3-14 Envelope Waveform Adjustment

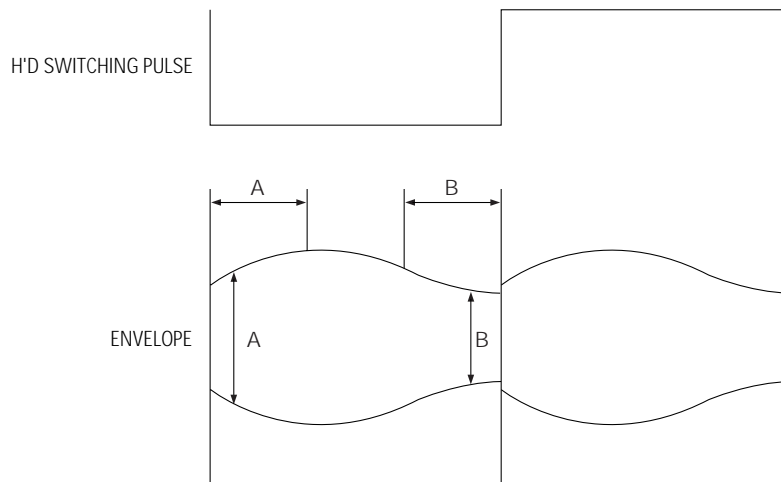



Fig. 3-15 Adjustment Points

- 6) Play back the Mono Scope alignment tape (SP mode).
- 7) Connect an oscilloscope CH-1 to the "Envelope" and CH-2 to the "H'D SW Pulse" for triggering.
- 8) Turn the guide roller heads with a flat head () driver to obtain a flat video RF envelope as shown in Fig. 3-16.

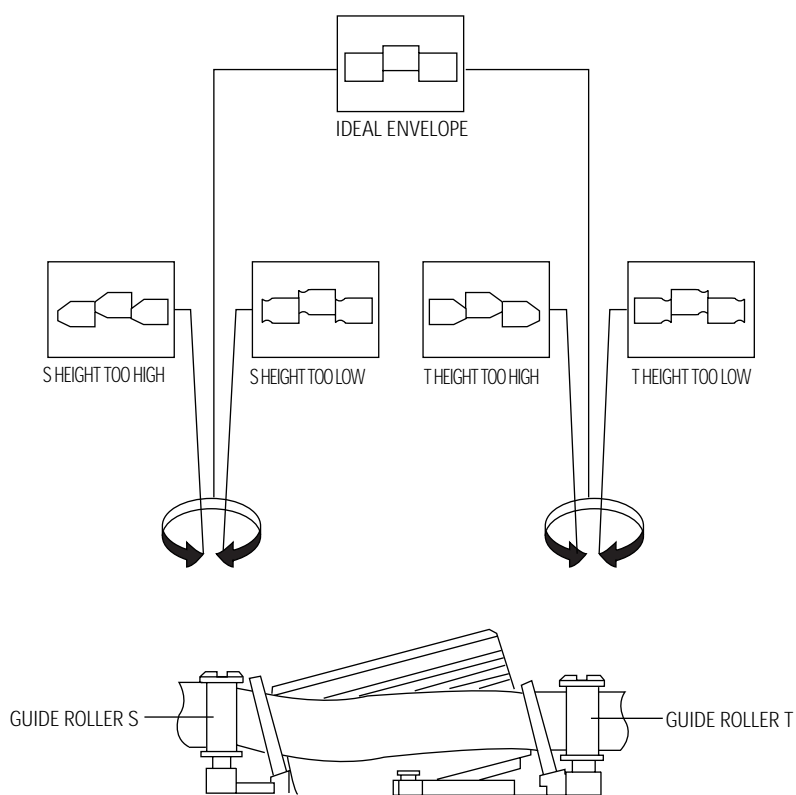


Fig. 3-16 Guide Roller S, T Height Adjustment

(3) Check Transitional Operation from RPS to Play

Check transition from RPS mode to play mode : Using a pre-recorded SP tape, make sure the entry side of envelope comes to an appropriate steady state within 3 seconds (as shown in Fig. 3-17).

If the envelope waveform does not reach specified peak-to-peak amplitude within 3 seconds, adjust as follows :

- 1) Make sure there is no gap between the supply roller lower flange and the tape.
If there is a gap, adjust the supply guide roller again.
- 2) Change operation mode from the RPS to the play mode (again) and make sure the entry side of envelope rises within 3 seconds.

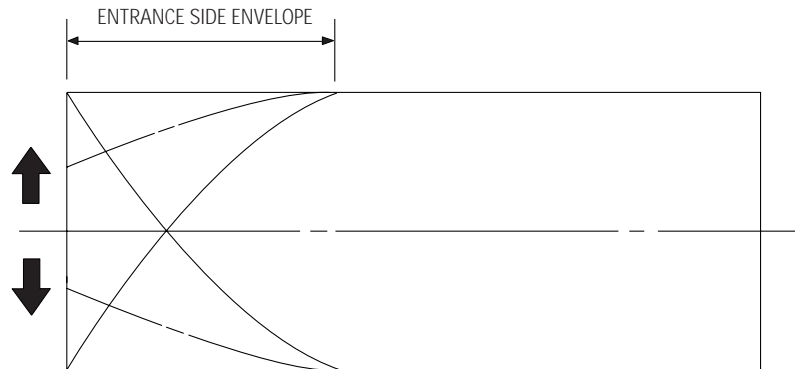


Fig.3-17 Video Envelope Rising when Operation mode Changes from RPS to Play Mode

(4) Envelope Check

- 1) Make recordings on T-120 (E-120) and T-160 (E-180) tape.
Make sure the playback output envelope meets the specification as shown in Fig. 3-18.
- 2) Play back a self recorded tape (recording made on the unit using with T-120 (E-120)).
The video envelope should meet the specification as shown in Fig. 3-18.
In SP mode, (A) should equal (B).
If the head gap is wide, upper cylinder should be checked.

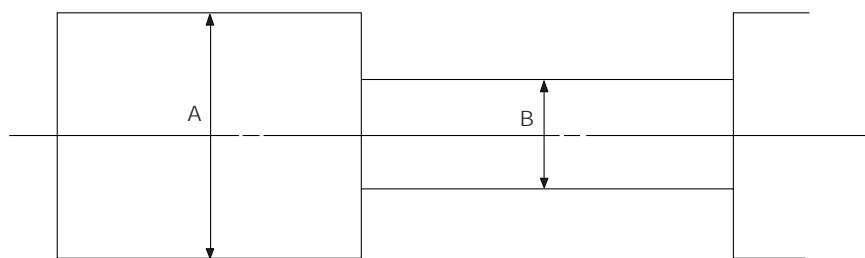


Fig. 3-18 Envelope Input and Output Level

(5) Tape Wrinkle Check

- 1) Run the T-160 (E-180) tape in the playback, FPS, RPS and Pause modes and observe tape wrinkle at each guide.
- 2) If excessive tape wrinkle is observed, perform the following adjustments in Playback mode :
 - ◆ Tape wrinkle at the guide roller S, T section : Linearity adjustment.
 - ◆ Tape wrinkle at tape guide flange : ACE head assembly coarse adjustment.

3-3-3 Reel Torque

- 1) The rotation of the capstan motor causes the holder clutch ass'y to rotate through the belt pulley.
- 2) The spring wrap PLAY/REV of holder clutch ass'y drives the disk reel S, T through gear idler by rotation of gear center ass'y.
- 3) Brake is operated by slider cam at FF/REW mode.
- 4) Transportation of accurate driving force is done by gears. (Gear Center Ass'y)

Note : If the spec. does not meet the followings specifications, replace the holder clutch ass'y and then recheck.

<Table 3-3>

MODE	TORQUE g/cm	GAUGE
PB	42 ± 11	Cassette Torquemeter
RPS	145 ± 30	Cassette Torquemeter

13. Circuit Operating Descriptions

13-1 Power Supply (Free Voltage)

(1) Comparison between Linear Power Supply and S.M.P.S.

(a) Linear

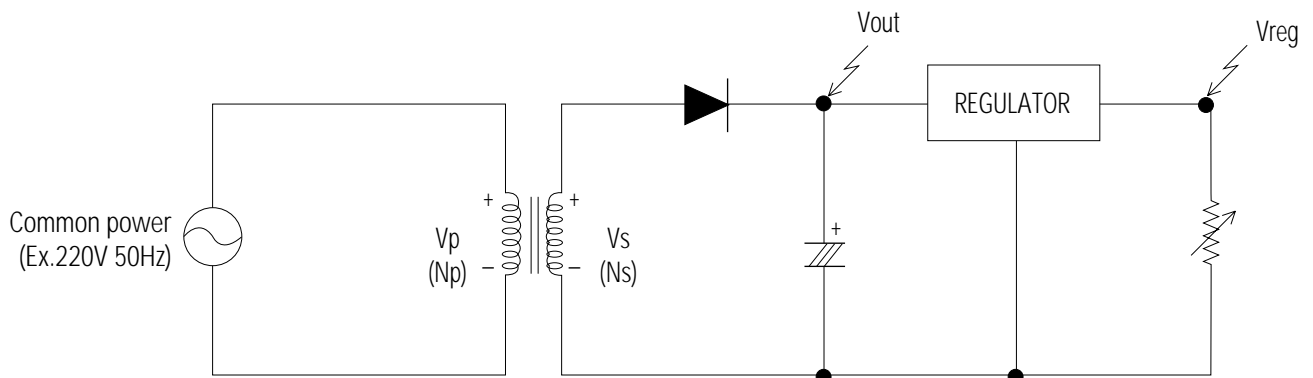


Fig. 13-1 Linear Power Supply

◆ Waveform/Description

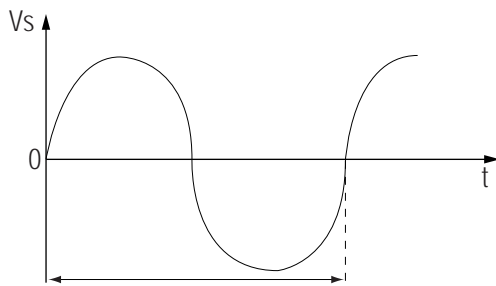


Fig. 13-2

Input : Common power to transformer (V_p).

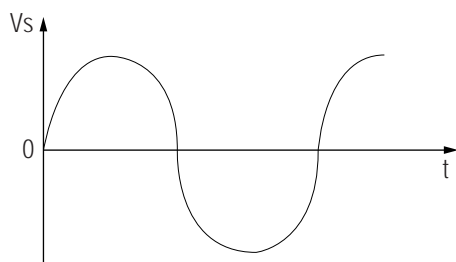


Fig. 13-3

The output V_s of transformer is determined by the ratio of 1st N_p and 2nd N_s .

$$V_s = (N_s / N_p) \times V_p$$

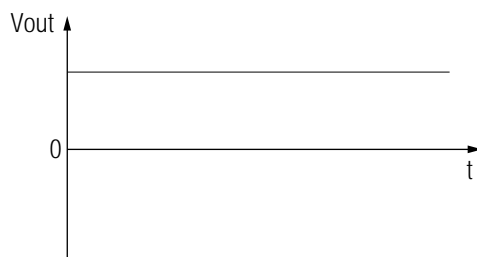


Fig. 13-4

V_{out} is output (DC) by diode and condensor.

◆ Advantages and disadvantages of linear power supply

1) Advantages : Little noise because the output waveform of transformer is sine wave.

2) Disadvantages :

- ❶ Additional margin is required because V_s is changed (depending on power source). (The regulator loss is caused by margin design).
- ❷ Greater core size and condensor capacity are needed, because the transformer works on a single power frequency.

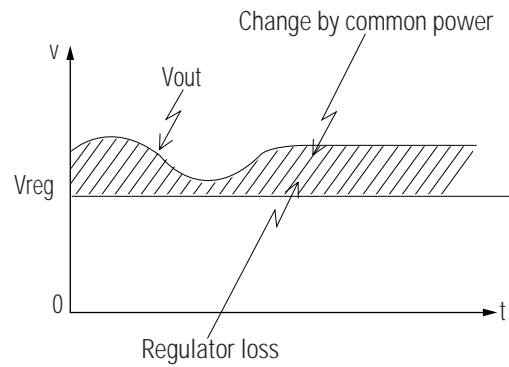


Fig. 13-5

(b) S.M.P.S. (Switch Mode Power Supply)

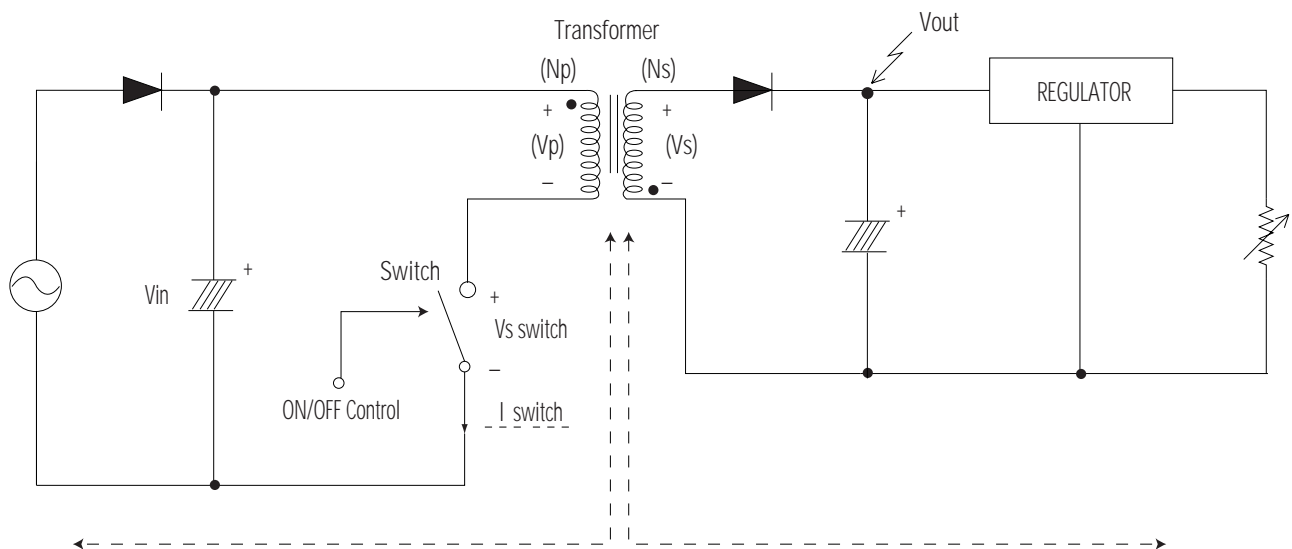


Fig. 13-6

◆ Terms

- 1) 1st : Common power input to 1st winding.
- 2) 2nd : Circuit followings output winding of transformer.
- 3) f (Frequency) : Switching frequency (T : Switching cycle)
- 4) Duty : $(T_{on}/T) \times 100$

(2) Circuit description (FLY-Back PWM (Pulse Width Modulation control))

(a) AC Power Rectification/Smoothing Terminal

- 1) D1SS01, D1SS02, D1SS03, D1SS04 : Convert AC power to DC(Wave rectification).
- 2) C1SS10 : Smooth the voltage converted to DC.
- 3) L1SS01, L1SS02, C1SS01, C1SS02 : Noise removal at power input/output.
- 4) R1SS01 : Rush current limit resistance at the moment of power cord insertion.
 - Without R1SS01, the bridge diode might be damaged as the rush current increases.

(b) SNUBBER Circuit : R1SD11, R1SD13, C1SD12, C1SD16, D1SS11

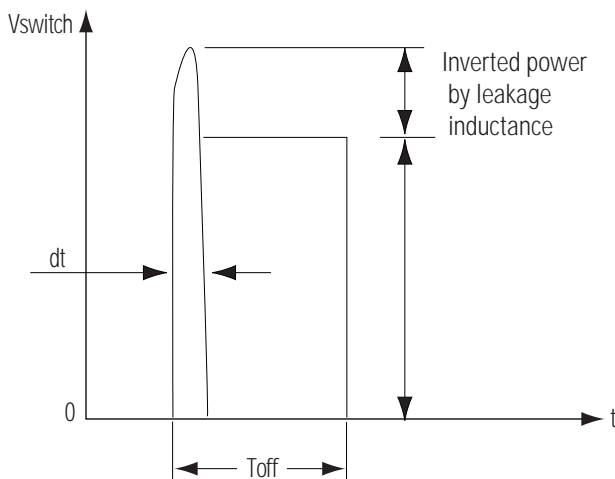


Fig. 13-7

- 1) Prevent residual high voltage at the terminals of switch during switch off/Suppress noise.
High inverted power occurs at switch off, because of the 1st winding of transformer :
($V = LI \times di/dt$. LI : Leakage Induction)
A very high residual voltage exists on both terminals of SCS11A because dt is a very short.
- 2) SNUBBER circuit protects SCS11A from damage through leakage voltage suppression by RC,
(Charges the leakage voltage to D1SS11 and C1SD12 and discharges to R1SD11 and R1SD13).
- 3) C1SS16 : For noise removal

(c) IC1SS2 Vcc circuit

- 1) R1SR01, R1SR02, R1SR03 : IC1SS2 driving resistance
(IC1SS2 works through driving resistance at power cord in)
- 2) IC1SF01 Vcc : R1SS08, D1SF02, C1SF02
 - ❶ Use the output of transformer as Vcc, because the current starts to flow into transformer while IC1SS2 is active.
 - ❷ Rectify to D1SF02 and smooth to C1SF02.
 - ❸ Use the output of transformer as IC1SS2 Vcc : The loads are different before and after IC1SS2 driving.
(Vcc of IC1SS2 decreases below OFF voltage, using only the resistance due to load increase after IC1SS2 driving.)

(d) Feedback Control Circuit

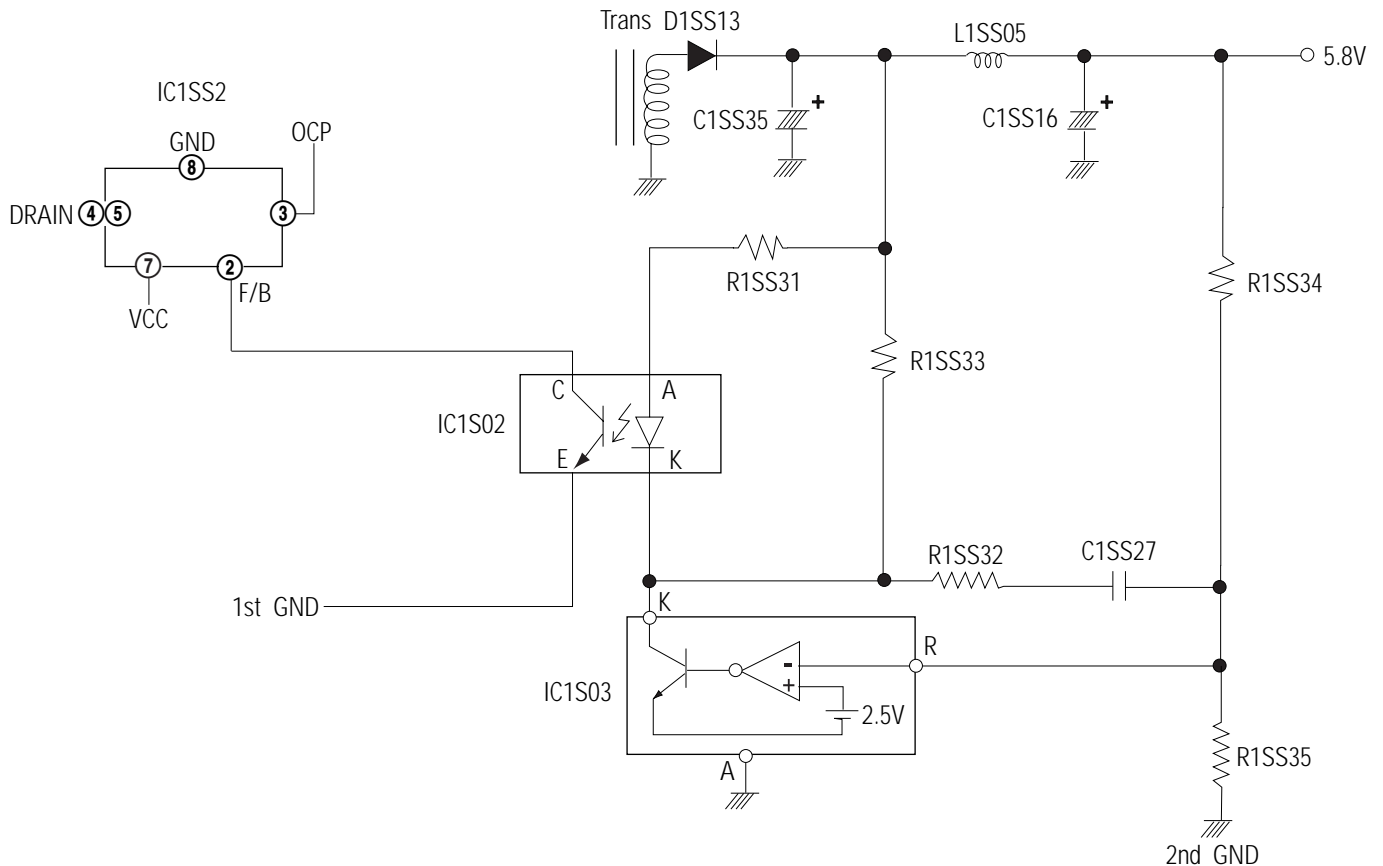


Fig. 13-8

- 1) F/B terminal of IC1SF01 determines output duty cycle.
- 2) C-E(Collector-Emitter) of IC1SF01 and F/B potential of IC1SF01 are same.

◆ Operation descriptions

- 1) Internal OP-Amp '+' base potential of IC1S03 is 2.5V and external '-' input potential is connected with R1SS35 and R1SS34 to maintain Vout of 5.8V. ($V_{out} = \frac{((R1SS34) \times R1SS35)}{R1SS35} \times 2.5V$)
- 2) If load of 5.8 V terminal increases(or AC input voltage decreases) and Vout decreases below 5.8V, then :
IC1S03 "P" potential down below 2.5V --> IC1S03 A-K of base current down --> IC1S03 of A-K current down --> IC1S03 Diode current down --> IC1S03 C-E current down --> IC1S03 C-E voltage up --> IC1SS2 F/B voltage up --> Out Duty up --> Transformer 1st current up --> Transformer 1st power up --> Vout up --> Maintain Vout 5.8V
- 3) If load of 5.8 V terminal decreases(or AC input voltage rises) and Vout rises above 5.8V, then :
Reverse sequence of the above description --> Duty down --> Vout down --> Maintain 5.8V (i.e., the feedback to maintains 5.8V).
 - ❶ R1SS33, R1SS31 : Reduce 5.8V overshoot
 - ❷ R1SS32, C1SS27 : Prevent IC1S03 oscillation(for phase correction)

(3) Internal Block Diagram

(a) Internal Block Diagram of S.M.P.S. Circuit

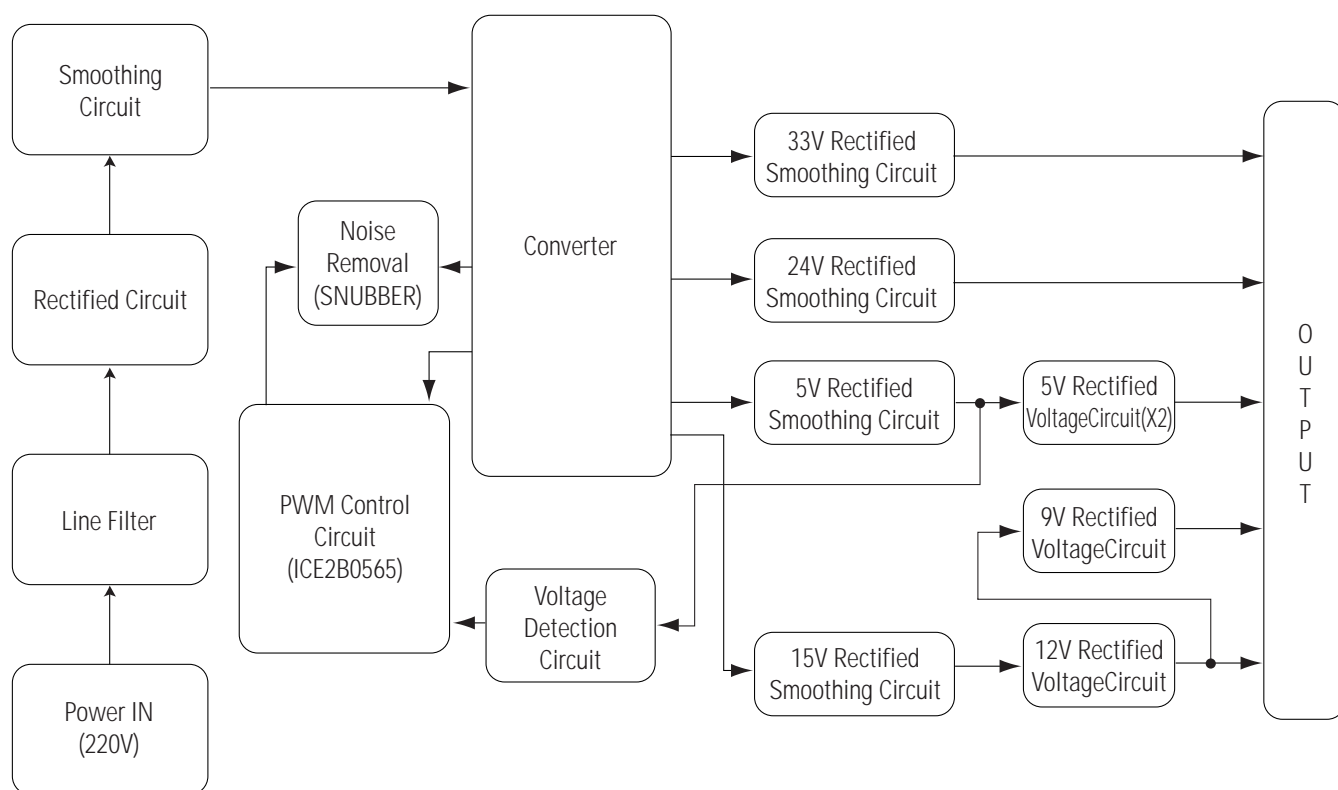


Fig. 13-9

(b) IC1SF01 (ICE2B0565) Internal Block Diagram

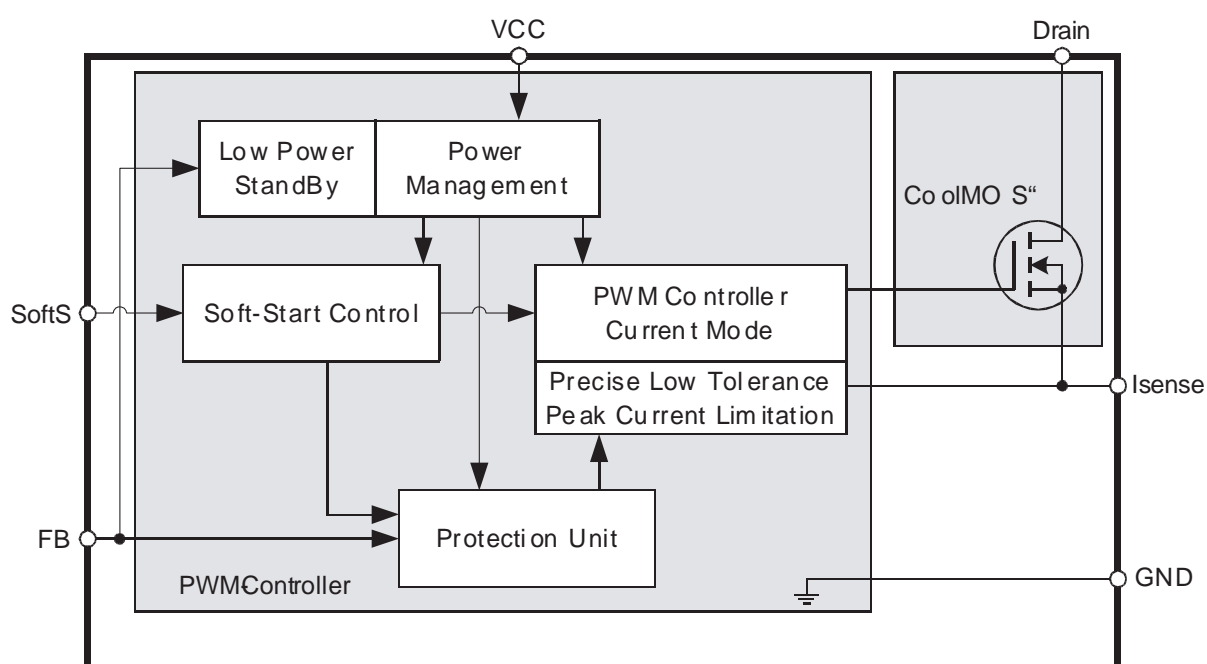


Fig. 13-10

13-2 System Control

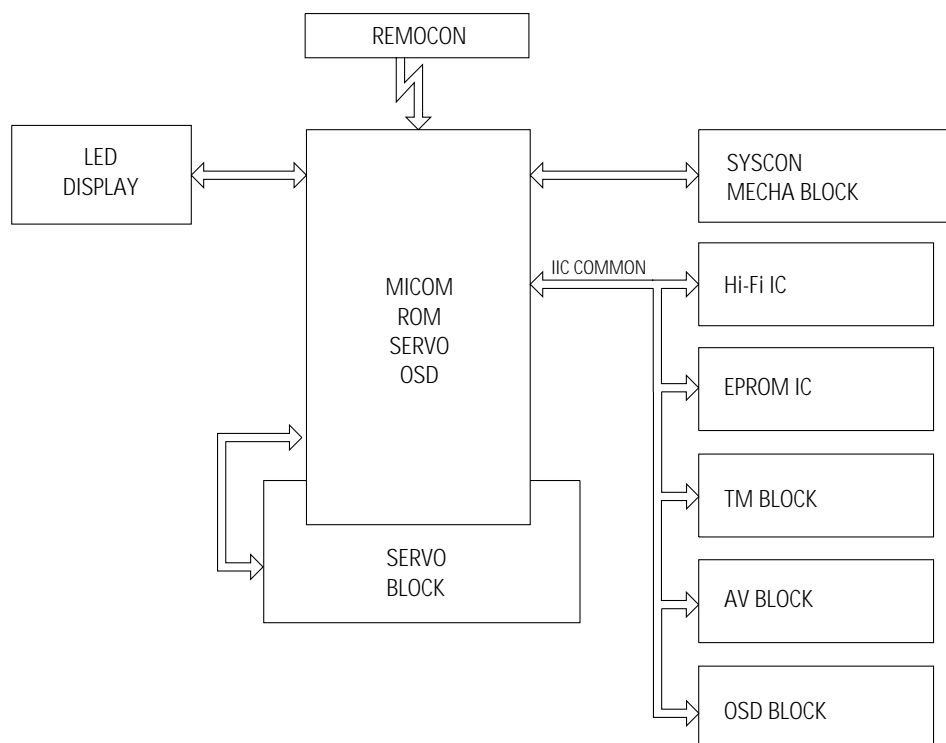


Fig. 13-11 Micom Block Diagram

(1) Outline

The system control circuit inputs the commands given by the operator to set the mechanism and circuit to the commanded mode. The circuit also inputs the detected output from the tape and mechanism protection sensor and protects the VCR and tape against abnormal operation.

Fig. 13-11 is a simplified system control block diagram.

The system control is performed by 4 control sections. (System and timer control, Servo control, F/S Tuner, On Screen Display).

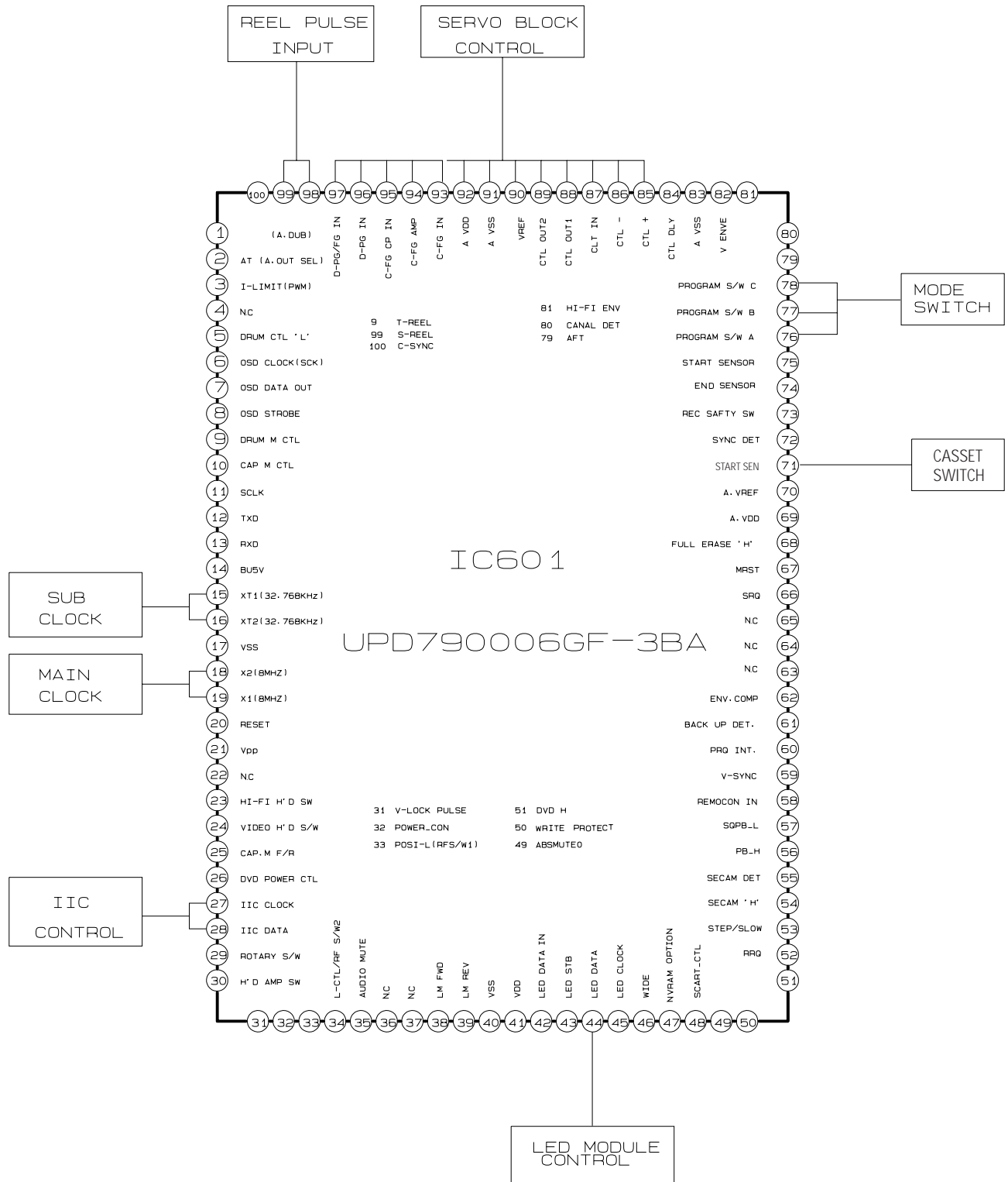


Fig. 13-12 Block Diagram

(2) Mechanism/Circuit Control

When the u-COM inputs operator's commands via the key input or remote input, the mechanism and circuits are set to the command mode. This function controls mechanism/servo section and audio/video processing section.

1) Cassette Loading Control

Controls loading and ejection of a cassette and determines the mechanism operation mode; tape loading/unloading, action/release of various breaks, tension, take up mechanism etc.

2) Tape Protection Sensor Monitoring

Detects abnormal operation in tape using the supply and take up end sensor, reel sensor and SW 25Hz pulse for drum rotation.

3) Capstan Motor Control

Determines the tape speed and direction, fast forwards and rewinds the tape etc.

4) Tape Counter Control

Counts the control pulses on the control track, picked up by the control head and shows it on the digital multidisplay.

5) Servo Control

Determines the operation mode of the servo circuit. Control the speed of drum and capstan motor, and then Control the phase of drum and capstan motor.

6) Record Safety Tap Detection

Detects the safety tab on the rear of a cassette to prevent a prerecorded program from being erased.

7) Loading/Unloading control

Controls a series of loading/unloading operation after the u-COM judges the operation mode and sets the mechanism to suitable mode. Fig. 13-13 show correlation between u-COM and peripheral components during the loading/unloading operation.

The mechanism state switch (PROG. SW) detects the mechanism position. When the driving gear is turned by the loading motor, the switch driving slider traces the groove, and this switch stops at the correct position corresponding to each mode. In other words, the u-COM judges the present mechanism state from the PROG SW after receiving the mode data, then it outputs the loading motor and capstan motor control signals. This continues until the PROG SW reaches the correct state by the u-COM.

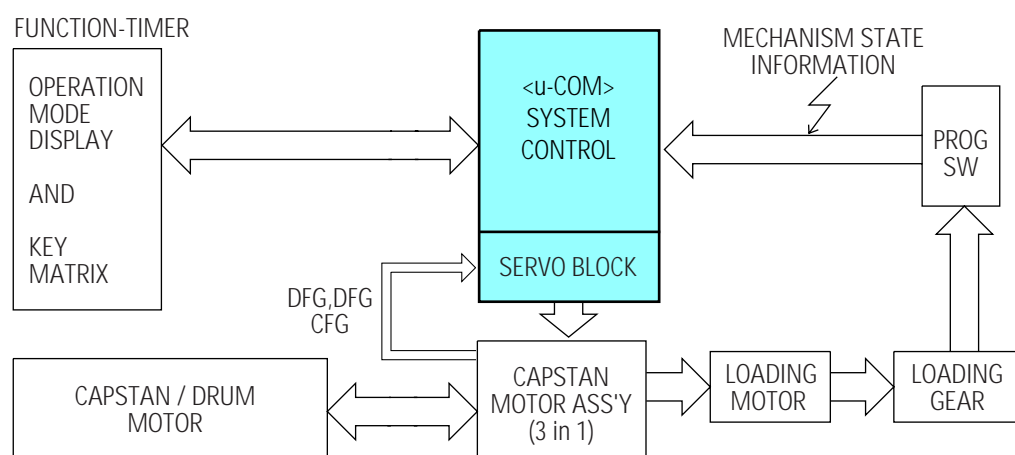


Fig. 13-13 The Relationship Between u-COM, Capstan, Cylinder and Loading Motor

(3) Program SW Input

The mechanism state for each mode is shown in table 13-1 below. The mechanism state is classified into position, and correlation between the switch position and mechanism state is shown in table 13-1, also.

Table 13-1 : Prog. SW State in Each Mode

POSITION	CAM S/W			START SEN	ACTION MODE
	A	B	C		
STANBY	0	0	0	0	Eject
POWER OFF	0	0	0	1	Unload POWER OFF
LOADING START	0	0	0	1	(Tape loading start point)
LOADING END	1	0	1	1	(Tape loading end point)
REV	1	1	0	X	Reverse picture search, reverse SLOW
PLAY	0	1	0	X	Play, Rec, F-PS, Still, SLOW, F-ADV
STOP 1	0	0	1	1	Stop (Play position 5 Min. over)
STOP 2	0	0	1	X	(MAIN Break ON MODE)
FF/REW 1	1	0	0	X	High speed Rew, Low speed FF
FF/REW 2	0	1	1	X	High speed FF, Low speed Rew

(4) Motor Control

In case of Scorpio-2 Deck, Loading Motor Drive IC lies in Capstan Motor, not like Scorpio-1 Deck.

In detail, Capstan Motor Drive IC is designed to drive Loading Motor + Capstan Motor + Cylinder Motor in one IC.

Table 13-2 : Motor Control Logic

CN604-PIN10	MOTOR
0 ~ 1V	Reverse
2 ~ 3V	Stop
4 ~ 5V	Forward

(5) Stop Mode

The VCR enters the stop mode when the stop button is pressed during playback, record, rewind and fast forward mode. When trouble is detected, the VCR enters the stop mode to protect the tape and mechanism or when the tape reaches the end, etc.

- State Input ;
Power switch on position.
Stop button operation in all mode, except for timer recording and XPR.

(6) Loading/Unloading Operation

mechanism operation in loading/unloading is as described previously.

- Signal Processing ;
- Audio, video record/play ;
Micom controls the AV1 chip by IIC line.

(7) Play Mode

- State input ; Play button operated in stop, fast forward, rewind, forward search, reverse search, still mode, etc.,
- Indication output ;
"PLAY" lights in LED display.
- Output at ;
IC601 Pin 25 (CAP F/R) : Hi

(8) Trick Play Mode

Trick play modes are classified into forward search, reverse search, still, slow and frame advance. Audio signal is muted. V-lock is controlled by pin 31 of IC601.

(9) Forward Search Mode

5 Times play speed search in SP.

- State input ; Press the fast forward button on the VCR front panel or the remote control in play or still mode.
- Indication output ; First digit rotates in LED display.
- Output at ;
IC601 Pin 25 (CAP F/R) : Hi

(10) Reverse Search Mode

5 times play speed reverse search in SP.

- State input ; Press the rewind button on the VCR front panel or on the remote control in play or still mode.
- Indication output ; First digit rotates in LED display.
- Output;
IC601 Pin 25 (CAP F/R) : Low

(11) Slow Mode

- State input ; Press the still button and next press the FF button on the remote control.
- Indication output ; First digit rotates in LED display.
- Output at ;
IC601 Pin 25 (CAP F/R) : Hi

(12) Frame Advance Mode

Views one stop-action “frame” after another.

- State input ; Press the F.ADV/STEP button on the remote control in still mode.
- Indication output ; Counter blinks in LED display.
- Output at ;
IC601 Pin 25 (CAP F/R) : Hi

(13) Play/Still Mode

The same track is traced by the video heads.

- State input ; Press the ► button in play and search modes.
- Indication output ; Counter blinks in LED display.
- Output at ;
IC601 Pin 25 (CAP F/R) : Hi

(14) Record Mode

Must use a cassette with the safety tab.

Index signal is recorded on the control track of the tape at the start of recording.

- State input ;
Press the record button during stop mode and record pause mode or at the preset time reached in the timer record mode. Press the REC button in stop mode.
- Indication output ; “R” lights in LED display in normal record mode.
- Output at ;
IC601 Pin 25 (CAP F/R) : Hi

(15) Record Pause Mode

The pinch roller is released from the capstan shaft in a moment. The brake is applied to the take up reel to prevent tape slack during the record pause mode.

- State input ; Press the pause button in the record mode.

Note : Inoperative during recording and XPR mode.

- Indication output ; “R” blinks in LED display.

(16) Fast Forward Mode

Tape fast forward operation using capstan motor.

- State input ; Press the rewind button in the stop or fast forward modes.
- Indication output ; First digit rotates in LED display.
- Output at ;
IC601 Pin 25 (CAP F/R) : Hi

(17) Rewind Mode

Tape rewind operation using the capstan motor.

- State input ; Press the rewind button in the stop or fast forward modes.
- Indication output ; First digit rotates in LED display.
- Output at ;
IC601 Pin 25 (CAP F/R) : Low

(18) Rewind Shut-Off Mode

Tape rewind operation then power off mode.

- State input ; Press the power button in the rewind mode.

(19) VISS (VHS Index Search System)

- Index search ;

Find a certain point of the tape using high speed REW/FF and start playback. (Fig. 13-14). The detection is obtained by adjusting the width of the control pulse. (duty cycle) When recording starts, the duty cycle of control pulse will change and then record on the control track of the tape for 2 seconds.

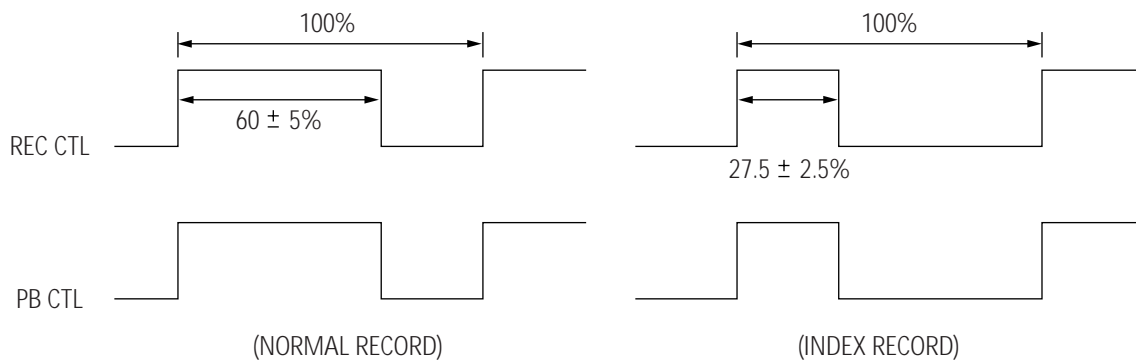


Fig. 13-14 Index Recording

- Index Detection Process

The detector block in IC601 detects the duty cycle of the control pulse input at Pin 85, 86. When detecting the index mark, the Micom controls the next operation such as scan play.

- Intro Scan

Continues FF or REW then playback at the index mark point for about 5 seconds and repeats the operation the end of the tape or the start sensor is detected during intro forward scan or intro reverse scan.

(20) Trouble Detection

The trouble detection circuits are provided to protect the from damage (Fig. 13-15). The reel lock sensor detects incorrect rotation of supply and take up reel. The reel lock sensor consists of the disk and photo sensor installed at the bottom of the reel disk. the disk has 6 or 8 shielder parts and the photo sensor consists of the LED and photo transistor assembly. When the light is shielded by the the shielder or enters the photo transistor, the output is obtained from the photo sensor. IC601 measures the period of the pulse. When it is 4 seconds or more during record/play, the VCR enters the reel emergency mode.

The VCR maintains the unload-power-on state in the reel emergency.

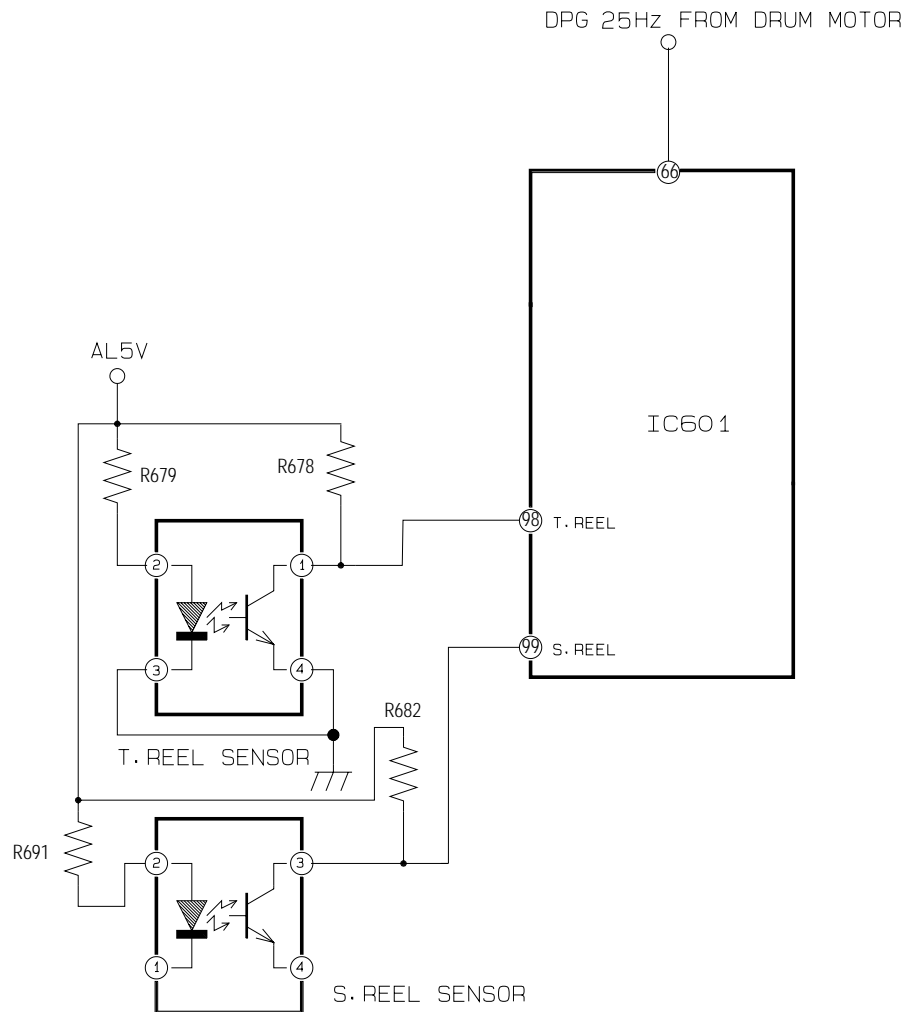


Fig. 13-15 Reel and Cylinder Lock T.END/S.END Sensor

(21) Cylinder Lock Sensor

Cylinder lock sensor detects abnormal rotation of the cylinder motor. Cylinder FG pulse is supplied to pin97 of IC601. MICOM measures the period of the pulse in the play/record, search and trick play models. When H'd S/W frequency is less than 10Hz for 5 seconds, the VCR enters the stop mode.

(22) Tape End Detection

When supply end sensor detects the transparent section at the end of tape, the VCR enters auto rewind mode, except during timer recording and OTR mode. The cassette LED emits light through the transparent section of tape to the photo transistors, which are installed at both ends of the cassette. When take up end sensor detects the start section of the tape during reverse search and rewind, the VCR automatically goes to stop mode.

(23) Tape Counter Control

Fig. 13-16 is a simplified diagram of the tape counter control circuit. The tape counter in the u-COM counts the control pulses derived from control head. The control signal on the control track of the tape is picked up by the control head and supplied to pins 85, 86 of IC601. The control pulse is amplified by the u-COM IC. The u-COM determines the tape direction so the counter counts up when the "CAP F/R" signal is Hi and the counter counts down when the "CAP F/R" signal is Low. By counting the control pulse, the counter data is supplied to the VF display. Counter displays the time and it is increased or decreased by one minute after counting 1500 control pulses. Counter mode is switched to clock mode when the display button is pushed or when the VCR goes to power off mode. When the reset button is pressed, the counter is reset to "00 : 00". The tape counter has a memory stop function.

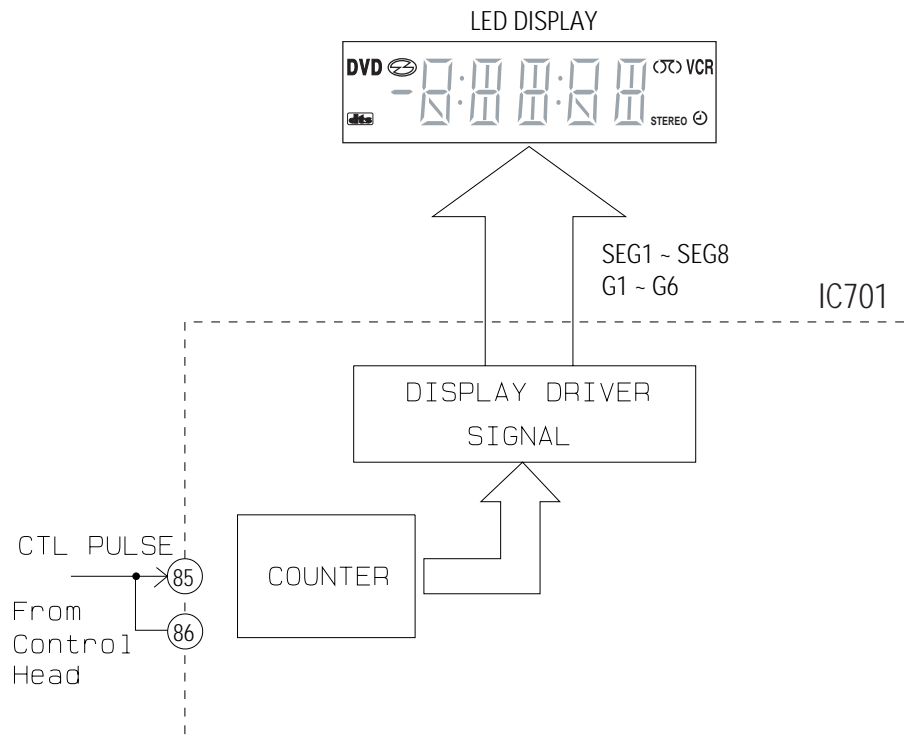


Fig. 13-16 Counter Display

(24) Timer/OTR Control

The timer can preset 6 programs in one year including daily and weekly programs. Express recording lets the operator record up to 9 hours without programming the timer.

(25) Clock Display

The clock generator inside of the μ -COM counts the oscillation signal of XT601 for the timer clock data.

(26) Power Failure Detection

μ -COM goes to the power failure mode when the 61 port is lower than 4/5 of AD Vcc level.

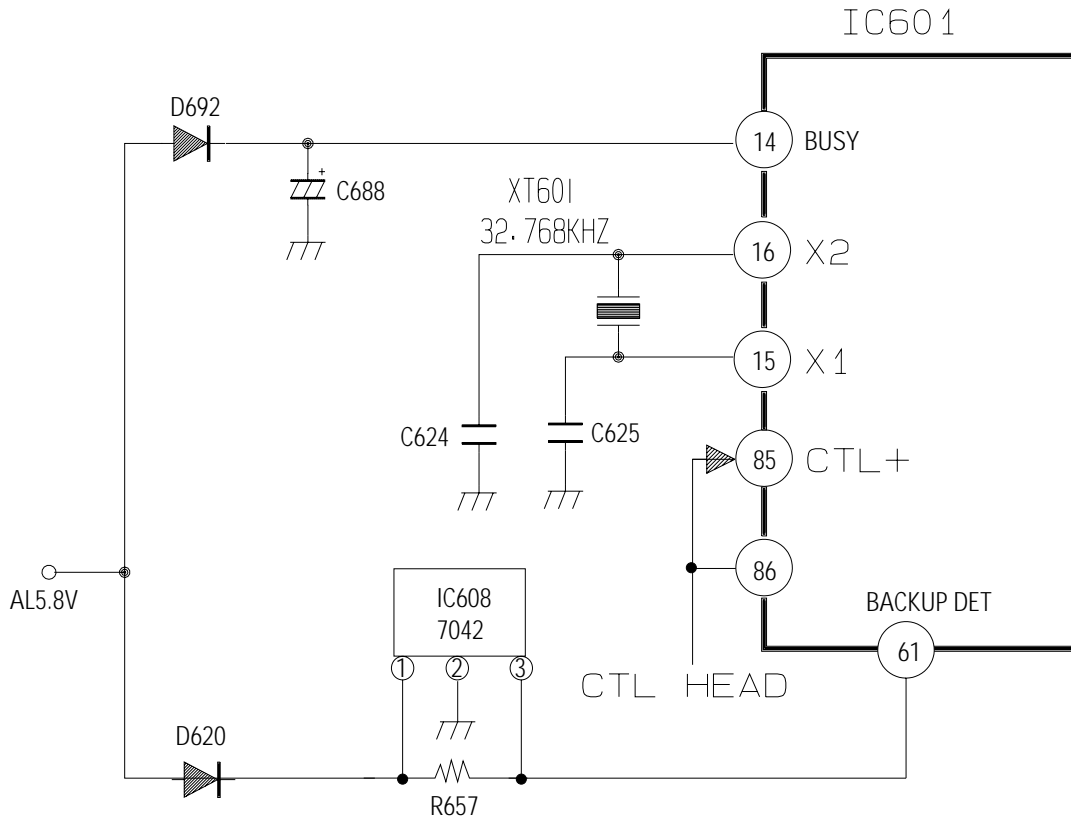


Fig. 13-17 Clock Control and Power Failure Detection

(27) 4H'D Control

During trick play (Still, Slow, F-Advance), it is necessary to control pre-amp, Video circuit.

The Micom control pin 29 (C-ROTARY), pin 30 (HD-AMP) of the IC601 during PB period in Slow mode. These port is applied to Video IC to operate the trick play.

13-3 Servo

(1) Outline

The servo system is divided into three loops. The cylinder servo controls the rotation of video heads, the capstan servo controls the tape speed, and the tension. In addition it's necessary to control cylinder motor, especially during trick play in 4H'D models. The tension servo maintains the tape tension constant: it keeps the compression strength of tape against the video heads at the optimum level so that a stable RF signal is produced during recording and playback. The tension servo operation is entirely mechanical. The cylinder servo loop controls the phase and speed of the cylinder motor. The speed is kept at a constant 1500 RPM and the phase determines the mechanical position relative to the vertical Sync signal. The capstan servo loop controls the phase and speed of the capstan motor so that the video head can trace the video track correctly. It keeps tape speed constant according to the mode (SP, LP) during playback and recording.

Table 13-3 : Servo System Signal

MOTOR	SYSTEM	MODE	REFERENCE SIGNAL	COMPARISON SIGNAL
CYLINDER (VIDEO HEAD) (4H' D)	PHASE	REC	V-SYNC	SW 25Hz
		PB	REF25Hz	
	SPEED	COMMON	8MHz	CYLINDER FG(500Hz)
	SPEED & PHASE	TRICK PLAY (STILL, SLOW)	MICOM CONTROL CYLINDER SPEED TO MATCH H-SYNC SPEED	
CAPSTAN (4H' D)	PHASE	REC	DIVIDED CFG PULSE	REF 25Hz
		PB	CTL 25Hz	
	SPEED	COMMON	8MHz	CAPSTAN FG
	SPEED & PHASE	TRICK PLAY (STILL, SLOW)	MICOM CONTROL CAPSTAN DRIVE SIGNAL WITH STEP SLOW AND CAP C.L	

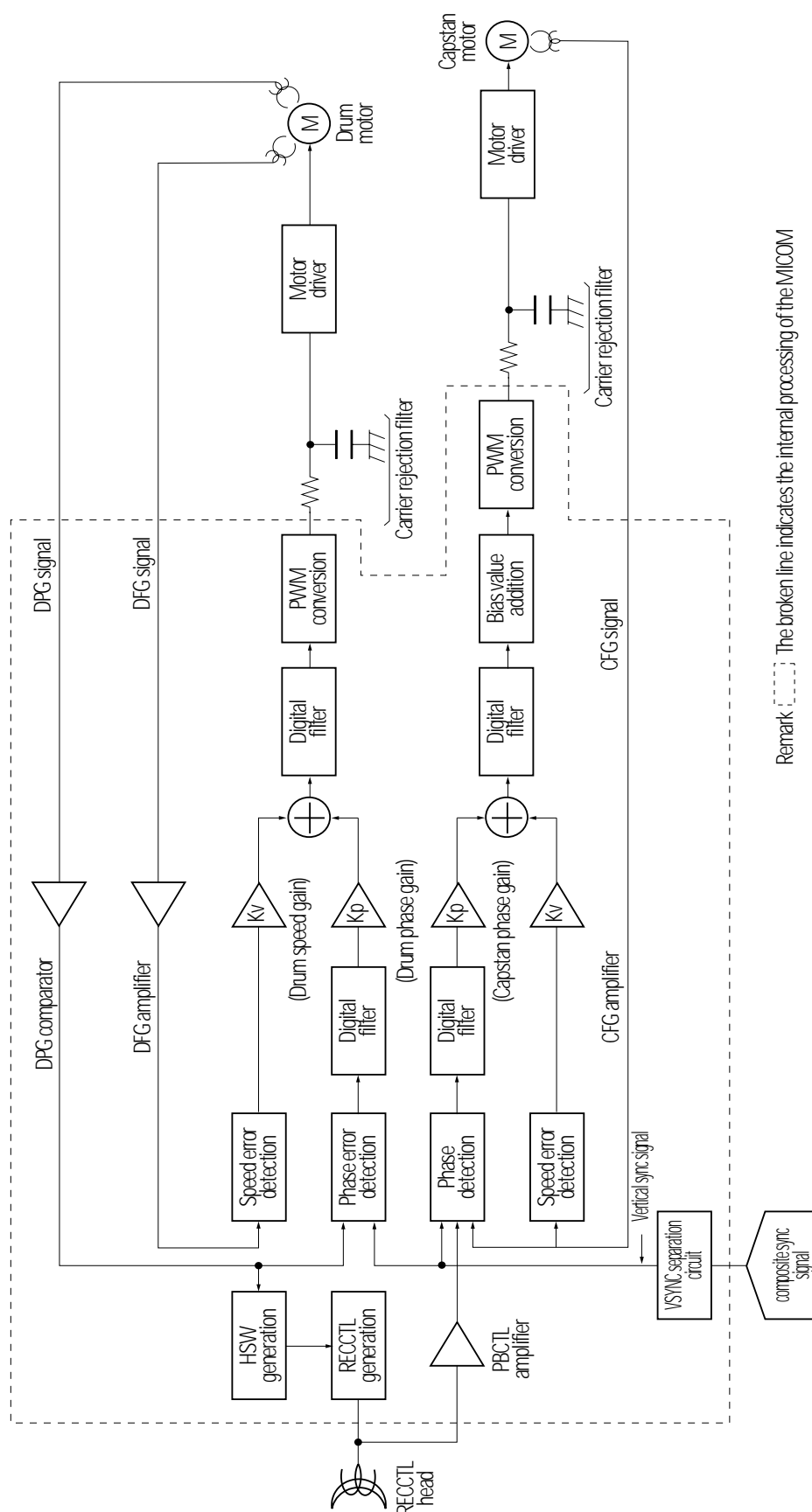


Fig. 13-18 Block Diagram

(2) Capstan Speed Error Detector

The capstan speed control operates so as to hold the capstan at a constant rotational speed, by measuring the period of the CFG signal. A digital counter detects the speed deviation from a preset value. The speed error data is added to phase error data in a digital filter. This filter controls a pulse-width modulate (PWM) output, which controls the rotational speed and phase the capstan.

When the error is zero, the PWM circuit outputs a waveform with a 50% duty cycle.

The CFG input signal from the capstan motor is a square wave the CFG input signal is compared by a comparator and then sent to speed error detector as the CFG signal.

The speed error detector uses the system clock to measure the period of the CFG signal, and detects the deviation from a preset data value. The preset data is the value that would result from measuring the CFG signal period with the clock signal if the capstan motor were running at the correct speed.

The error detector operates by latching a counter value when it detects an edge of the CFG signal.

The latched counter provides 16 bits of speed error data for the digital filter to operate on.

The digital filter adds the speed error data to phase error data from the capstan phase control system, then sends the result to the pulse-width modulator as capstan error data.

(3) Capstan Phase Error Detector

The capstan phase error detector consists of a 16-bit counter, a capstan phase preset data register pair, a latch signal circuit driven by a feedback signal, and a capstan phase error data register pair.

The capstan phase control in rec mode is executed by comparing HD S/W, which is synchronized with V-sync, with divided CFG signal. And then it does in playback mode by comparing HD S/W, which is synchronized with DFG and DPG, with PB CTL signal.

The latch signal for the phase error data in record mode is the divided CFG signal, which is divided from the CFG signal in the CFG frequency divider to a frequency of 25Hz.

In playback, the latch signal is the divided CFG signal obtained by frequency division from the rising edge of PB-CTL signal (playback control pulse signal).

The error data is a signed binary value centered on a phase error of zero (corresponding to the correct rotational phase). If the phase lags the correct phase, the error is positive (+).

If the phase leads the correct phase, the error is negative (-).

(4) Drum Speed Error Detector

Drum speed control operates so as to hold the drum at a constant rotational speed, by measuring the period of the DFG signal. A digital counter detects the speed deviation from a preset value. The speed error data is added to phase error data in a digital filter. The filter controls a pulsewidth modulated (PWM) output, which controls the rotational speed and phase of the drum.

The DFG input signal from the drum motor is a square wave. The DFG input signal is compared by a comparator and then sent to the speed error detector as the DFG signal.

The speed error detector uses the system clock to measure the period of the DFG signal, and detects the deviation from a preset data value. The preset data is the value that would result from measuring the DFG signal period with the clock signal if the drum motor were running at the correct speed.

The error detector operates by latching a counter value when it detects an edge of the DFG signal. The latched count provides 16 bits of speed error data for the digital to operate on.

The digital filter adds the speed error data to phase error data from the drum phase control system, then sends the result to the pulse-width modulator as drum error data.

(5) Drum Phase Error Detector

Drum phase control must start operating after the drum motor is brought to the correct rotational speed by the speed control system. Drum speed control works as follows in record and playback.

- ◆ Record : Phase is controlled so that the vertical blanking intervals of the recorded video signal will line up along the edge of the tape.
- ◆ Playback : Phase is controlled so as to trace the recorded tracks accurately.

A digital counter detects the phase deviation from a preset value. The phase error data is added to speed error data in a digital filter. this filter controls a pulse-width modulated (PWM) output, which controls the rotation phase and speed of the drum. When the error is zero, the PWM circuit outputs a waveform with a 50% duty cycle.

The phase counter error detector compares the phase of the DPG pulse (tach pulse), which contains video head phase information, with a reference signal. In the actual circuit, the comparison is carried out by comparing the head-switching (HSW) signal, which is delayed by a counter that is reseted by DPG, with a reference signal. The reference signal is the REF 25Hz signal, which differs between record and playback as follows.

- ◆ Record : V sync signal extracted from the video signal to be recorded (frame rate signal, actually 1/2 V sync).
- ◆ Playback : 25Hz signal divided from the system clock.

(6) SW 25Hz Pulse Generation

The SW25Hz pulse is generated from IC601.

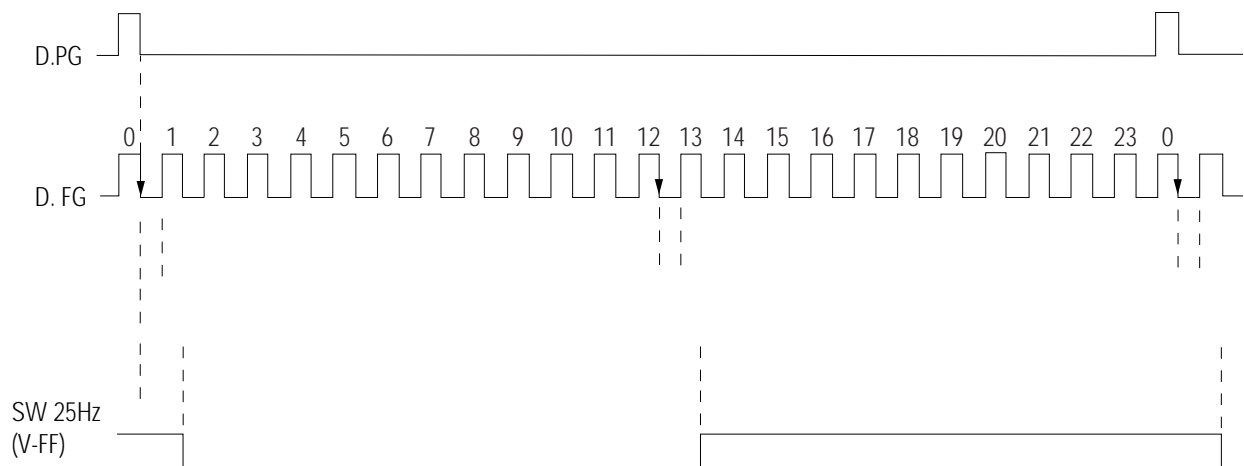


Fig. 13-19 SW 25Hz TIMING CHART

(7) V-Lock Phase

V-lock pulse is used for adjusting the picture's vertical vibration in trick play (still,slow).

The value is varied by tracking up/down key in trick play mode the variable range from 3H to 12H .

In trick play mode, the V-LOCK pulse position of CH-1 is variable but CH-2 is fixed.

During search mode ,both CH-1, 2 and V-LOCK position are fixed to 6.5H.

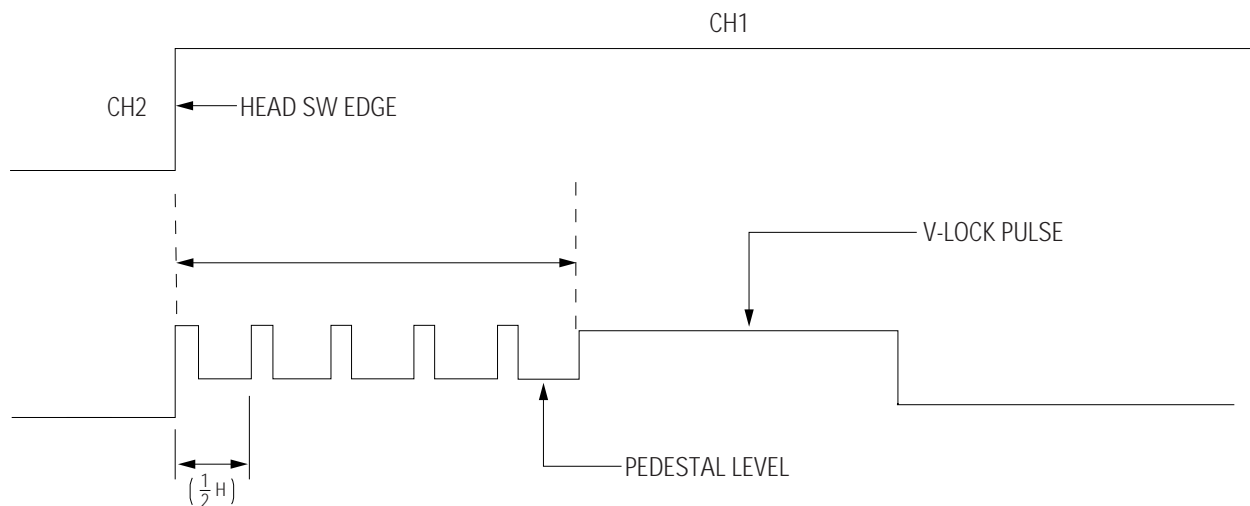


Fig. 13-20 V-LOCK PULSE

13-4 VCR Video

(1) Luminance Signal Recording System

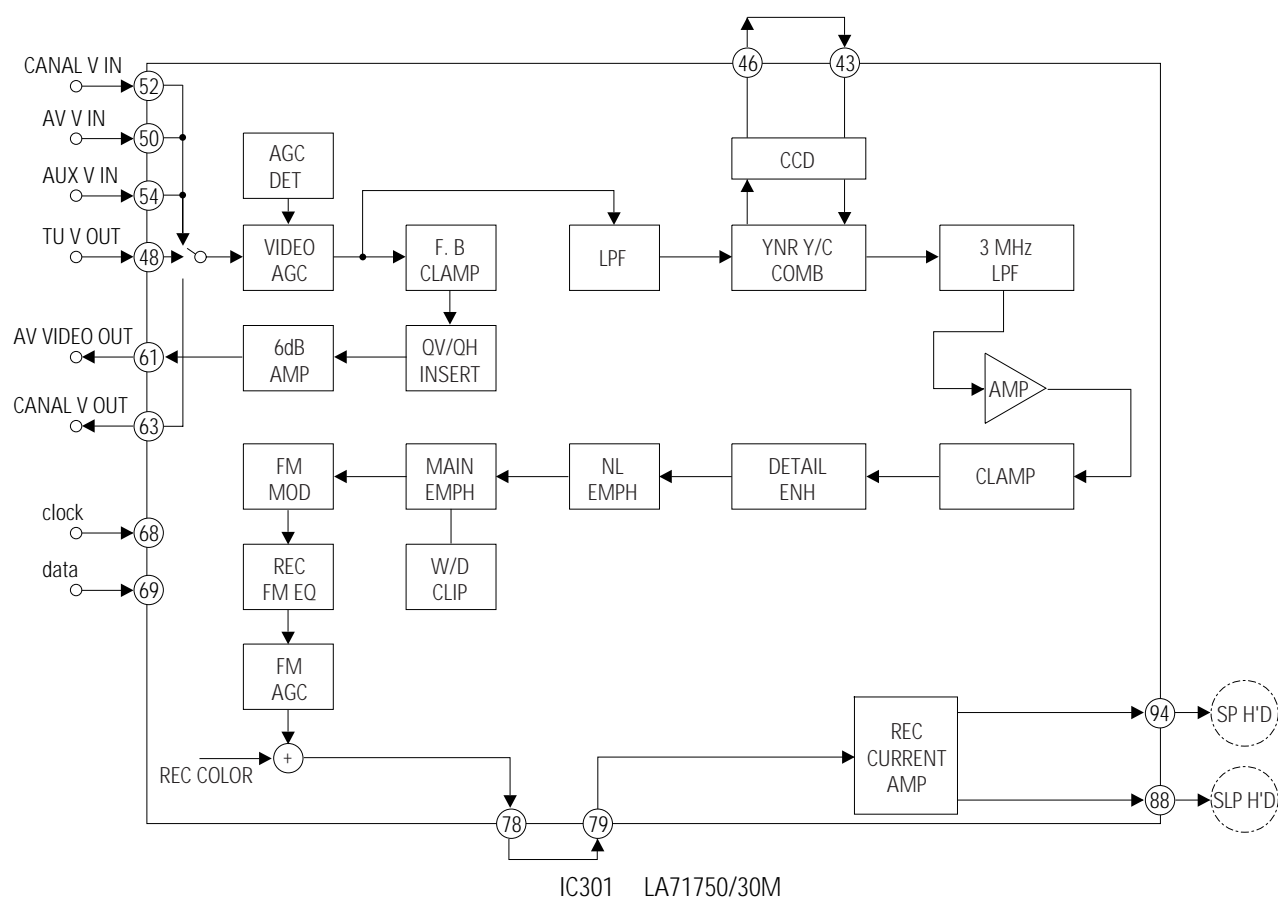


Fig. 13-21 Luminance Record Process

1) Outline

Fig. 13-21 shows the video signal recording system. Line input signal or tuner input signal is selected by Micom. Input selection is done with the INPUT SELECT button on the remote. The input select control signal is supplied to the pin 68(clock),69(data) of video IC from Micom IC.

The selected video input signal goes to pin 48(TUNER),50(AV), 52(CANAL), 54(AUX) of Lumi/Chroma processor IC (IC301). And then it enters VIDEO AGC circuit. The gain of AGC circuit is controlled by AGC detector so that the output is constant (approx. 2Vp-p). The output signal of AGC is clamped by the FBC(Feed Back Clamp) circuit. This signal appears at pin 26, after being amplified at the internal video amp and driver.

The output signal from the clamp circuit enter the detail enhancer circuit. In the detail enhancer circuit, the low level high frequency video signal is emphasized to improve the original signals frequency characteristics. nonlinear emphasis circuit is employed to improve S/N and frequency response characteristics together with the following main emphasis. Noise effects the FM wave at a higher frequency, so the S/N can be improved by emphasizing the higher frequency before recording and by suppressing the play signal during demodulation. The difference of non linear emphasis from main emphasis is that the emphasis characteristics change is depending on the input level. The gain of the emphasis circuit is inversely proportional to the level of the high frequency component of the signal. That is, if the high frequency portion of the signal is low the main emphasis circuit will amplify the signal.

2) Main Emphasis Circuit

The dynamically emphasized luminance signal is now supplied to the main emphasis circuit where all the high frequency components of the signal are boosted more than the low frequency components. The boosting action is required for the high frequency components because in the FM recording method, the noise of the playback signal increases in proportion to the modulated signal frequency or low level signal. By using the nonlinear emphasis and main emphasis system, the total S/N ratio is increased. The output of the main emphasis circuit is then supplied to the white and dark clip circuit.

3) White and Dark Clip Circuit

After emphasis is performed, large overshoots and undershoots in the luminance signal are limited to a specified level. This is done to avoid FM over modulation. The output of the main emphasis circuit is then supplied to the FM modulator circuit.

4) FM Modulator

(a) The amplitude of the FM signal is limited, so the signal is recorded on tape near the maximum record level which increases the S/N ratio.

(b) The FM carrier is set to 3.8MHz (at the Sync tips) and the deviation to 4.8MHz by inside IC circuit (for the white peak). The actual device which constitutes the FM modulator is a stable multivibrator. This multivibrator generates a sine wave output of variable frequency. The frequency of sine wave is governed by the level of the processed video signal at any given point. Therefore, the processed video signal varies the frequency of the sine wave which is frequency modulation (FM). During playback in SLP mode, the crosstalk of the adjacent track is more apparent than in standard mode. It appears as jitter and noise on the monitor. To reduce this noise from the screen, the FM carrier frequency has to be $1/2f_h$ shifted up during recording. This is done by applying the head switching pulse to the FM modulator during SLP recording. The FM modulated luminance signal goes to record equalizer circuit and it is mixed with chrominance signal at the record Amp circuit inside video IC.

5) Record Amp

The frequency modulated luminance signal and chroma signal are mixed in the record amp of pre-amp block inside video IC. Then this mixed signal is amplified and supplied to the video heads via the rotary transformer and recorded on the magnetic tape.

Tape speed selection determines which video heads will be used.

That is, signal output from pin88 (SLP) and 94 (SP) of pre-amp block are supplied to video heads.

Control signal of speed mode is applied to pin 68(clock), 69(data) of video IC from Micom IC.

(2) Luminance Signal Playback System

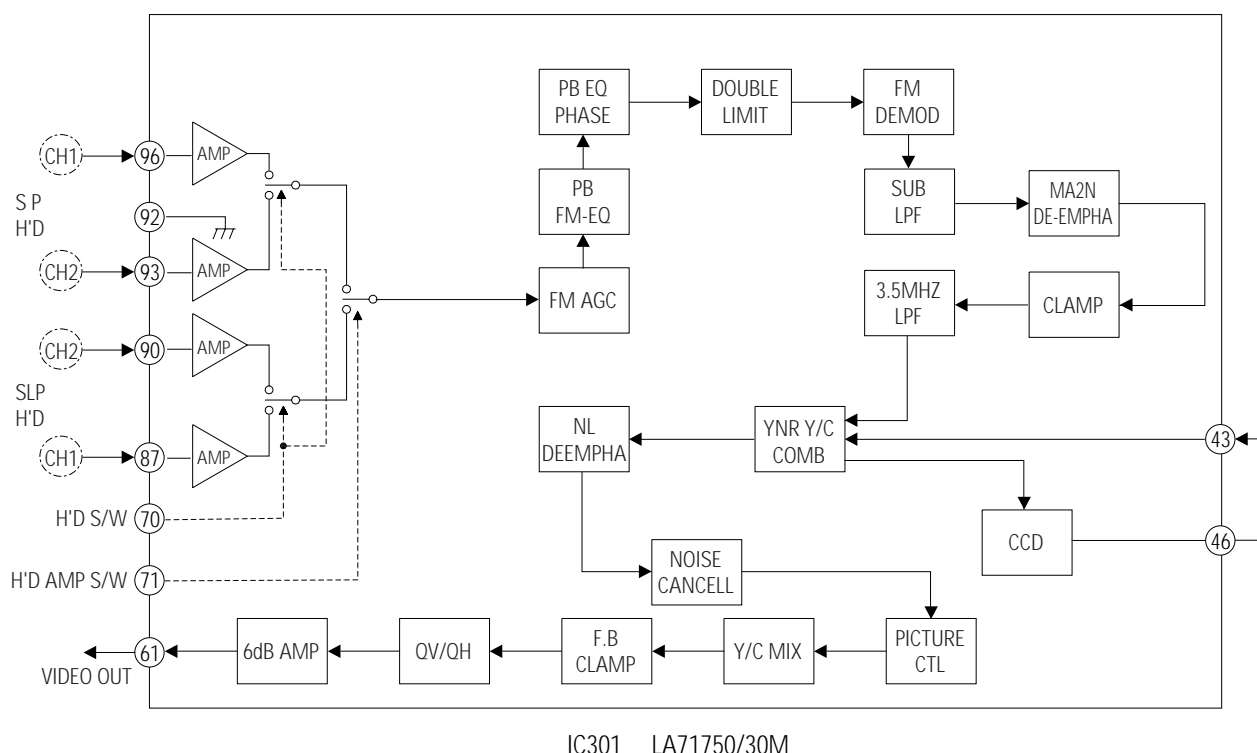


Fig. 13-22 Luminance Playback Process

1) Outline

The video signal recorded on the tape is picked up by CH1, CH2 head and is supplied to pre-amp block via rotary trans. During playback, as per the speed, SP and SLP head is determined by Pin70 of respectively. CH1 signal inputs to Pins 87 and 96 while CH2 signal inputs to Pins 90 and 93 of video IC. The pick up operation is controlled by the head switching pulse inputted to pin 70. During the high portion of the switching pulse, CH2 is picked-up and just the opposite is true for CH1. In the pre amp IC, the FM signal is amplified 60dB and this signal is applied to FM AGC.

2) FM AGC AMP

At the FM AGC Amp (FM), signals are automatically balanced. One of the AGC circuit outputs is fed to AGC detector circuit which detects signal level fluctuations. The detector output signal is applied to the FM AGC Amp to keep the output constant. This output is applied to the PB FM EQ block. FM EQ is correct the phase distortion and level. The signal through PB EQ circuit is applied to the double limiter.

3) Double Limiter Circuit

A FM signal on the tape which contains AM components will be read during playback. If there is a severe AM component, a drastic drop in FM carrier can occur. This lack of FM carrier can be called a noise region. Double limiting is used for improving the S/N ratio and carrier loss. The playback FM signal is split into two paths, one goes to high pass filter and sub-limiter. The other goes to the main-limiter after passing through a LPF. ONE path of the FM signal goes to the high pass filter, so that the low frequency(AM) component can be removed, and the other carrier is supplied to the sub-limiter. The output signal of sub-limiter is mixed with the signal from the low-pass filter and sent to the FM demodulation circuit.

4) FM DEMODULATOR

The FM demodulator consists of a stable mono multivibrator balanced modulator (BM) and a LPF. The FM demodulator circuit first converts the FM signal to a pulse width modulator signal. Then the circuit smoothes the PWM signal to demodulate the video signal. This demodulated signal is fed to the LPF to remove its FM carrier component and any other harmonics. The demodulated luminance is applied to the 3.5MHz LPF through main deemphasis circuit. To reduce demodulation noise, the output of the 3.5MHz LPF is applied to a non-linear deemphasis circuit through YNR circuit.

5) Main De-emphasis Circuit

Before modulation, main emphasis was performed. Because the high frequency components of video signal were boosted more than the low frequency components in the recording mode, main deemphasis must be performed to obtain a normal video signal. That is this circuit returns the emphasized high frequency component to the original value.

6) Non Linear De-Emphasis Circuit

This circuit is the counter part of the dynamic pre-emphasis circuit during recording. The characteristics are also the opposite of those in recording.

7) Drop Out Compensator/YNR Circuit

This circuit compensated for missing parts of the FM signal due to dust, dirt on the tape or irregular tape coating, etc. The clamped video signal is supplied to the CCD 1H circuit. The 1H delayed video signal from CCD block is also supplied to the 6MHz LPF to reject the sampling noise of CCD IC.

Then, the output of LPF is applied to Pin 43 of video IC. When the DOC detector detects the FM loss, a 1H delayed video signal is added in place of the missing signal.

8) Noise Canceller Circuit

The noise canceller circuit removes the high frequency noise contained in the video signal which has the reverse characteristics of the detail enhance in the recording mode. The output of the noise canceller circuit is supplied to the Luminance and Chrominance mixer circuit. The mixed chroma and luminance signal are then output at Pin 61.

(3) Chroma Signal Recording System

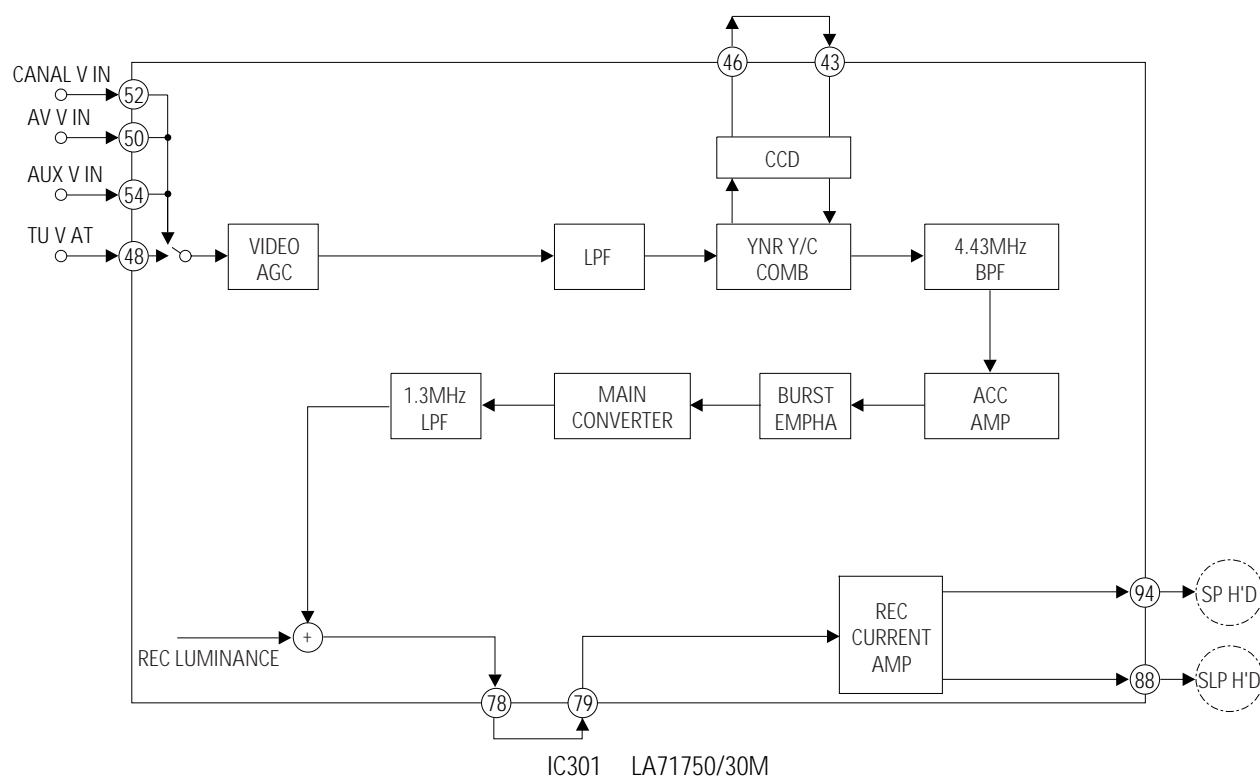


Fig. 13-23 Chrominance Record Process

1) Outline

Fig. 13-23 shows the chroma signal recording system. The chroma signal recording process is performed by video IC. The input video signal is supplied to Y/C COMB circuit through AGC AMP.

The output signal of Y/C COMB circuit is applied to ACC amplifier. The ACC amplifier is used for both burst ACC which keeps the burst level at a constant value in recording and the color ACC which controls the reference level of the burst ACC with the color signal level. The color ACC works to maintain a relatively high output level by boosting low level input signals to improve color S/N ratio. The signal is then applied to the burst emphasis circuit. Burst emphasis emphasizes the burst signal by +6dB during recording and feeds it to the main converter. The 4.43MHz signal are mixed in the main converter to perform frequency conversion.

The main converter is a mixer having the two types of output components which are the added frequency of $5.06 + 4.43 = 9.49\text{MHz}$ and the difference frequency component 627KHz.

Added frequency is rejected by the 1.3MHz LPF and the 627KHz down converted chroma signal is supplied to the luma/chroma mixer of pre-amp block and then recorded on the tape via the record amp and heads.

AFC detection is performed with the head switching pulse and the fh signal generated from 321fh VOC output. The detector output controls the VCO frequency which will be locked precisely at 321fh (5.016MHz).

The 321fh signal is counted down to 1/8 and the resultant 40.125fh (=627KHz) carrier signal is phase shifted triggered by each horizontal sync signal which is wave shaped as a 50% duty pulse by the pulse generator.

The direction of the rotational phase shift depends on the levels of the rotary head switching signal and when the switching signal is "H" level, the phase is retarded by 90 degrees for every 1H, and when is at a "L" level it will advance by 90 degrees for every 1H this 40fh phase shifted sub-carrier (PSSC) signal enters the sub-converter and the 4.43MHz carrier signal is locked at the color burst frequency by the record APC.

The PSSC signal is frequency converted into $4.43\text{MHz} \pm 627\text{KHz}$. Then 5.06MHz component ($= 4.43\text{MHz} \pm 627\text{KHz}$) is extracted through a 5.06MHz BPF. The 5.06MHz signal is used as a carrier signal for down conversion of the color signal as described previously.

2) ACC (Automatic Color Gain Control) Circuit

The ACC is used as burst ACC in the LP mode, however it is also used for peak ACC in the SP/SLP mode. The purpose of using two different ACC operations is to improve the overall Chroma S/N ratio during playback. In SP and SLP, there is H-sync alignment. This indicates that there is burst alignment as well. Whenever two video tracks overlap or a video head picks up crosstalk from an adjacent track, beats are produced during playback. Perhaps the most noticeable beats are produced by H-sync and burst. But in SP and SLP, these beats occur right at H-sync and burst and are out of the picture. In LP, however, there is no H-sync alignment and these beats can be seen in the picture. To keep the beats at a minimum in LP, we keep the burst level constant so that the beat intensity is constant. We know that ACC acts to improve the color S/N, and in LP, the ACC detector locks at the burst level, and keeps it constant. Thus we have ACC operation with the least beats. In SP and SLP, the beats caused by burst overlap are out of picture, so we don't really mind if the burst level changes or not. To improve the color S/N ratio even more, we use peak ACC in SP and SLP. That is, if the chroma level is too low to record, the amplification degree is increased by 3dB. However, the chroma level is sufficient for recording, this peak ACC is changed to burst ACC to avoid over amplification. By changing the ACC according to picture color content, the burst level may vary. The color ratio improvement is based on the color content itself during SP and SLP provides a somewhat better S/N ratio.

3) Four (4) Phase Rotation

CH1 is advanced 90 degrees every channel, while CH2 is delayed 90 degrees. When the frequency is set to 627KHz, if phase is shifted by $\pm 90^\circ$ it becomes $627\text{KHz} \pm 90^\circ$. The $40f_h \pm 90^\circ (=627\text{KHz} \pm 90^\circ)$ is balanced modulated via fsc (4.43MHz) depending on which side band is detected. That is, the $f_s + 40f_h \pm 90^\circ$ ($4.2\text{MHz} \pm 90^\circ$) of total frequency is supplied to the main converter. In record mode, the signal operates same as in play back mode. During playback, the phase is returned to original state.

4) AFC (Automatic Frequency Control) Circuit

Luminance signal is input to H-sync separator. The H-sync is separated and supplied to phase comparator. This signal can be described as f_h (Horizontal Sync frequency of input video signal). However, VCO oscillates at $321f_h$ (5.016MHz). This $321f_h$ is counted down by $1/8$ and $1/40$ and resultant f_h is supplied to phase comparator. f_h and f_h are supplied to the phase comparator for comparison of their phases. After comparison, the phase differences is output to VCO ($321f_h$) in terms of error voltage. Therefore, the oscillation frequency of VCO is controlled by this error voltage. That is, if the f_h phase is changed by H-sync signal f_h , error voltage is changed accordingly and if the phases of f_h and f_h are met due to change of VCO oscillation frequency, error voltage does not feedback. $321f_h$ VCO is oscillated in accordance with phase sync at f_h . Therefore, $40.125f_h$ input to sub converter by phase shift is always sync horized with phase. The AFC loop performs the same operation during record and playback. In recording, phase of VCO is in accordance with H-sync signal of current video signal. Which in playback, the phase sync of VCO is consistent with H-sync signal which is separated from the video signal.

(4) Chroma Signal Playback System

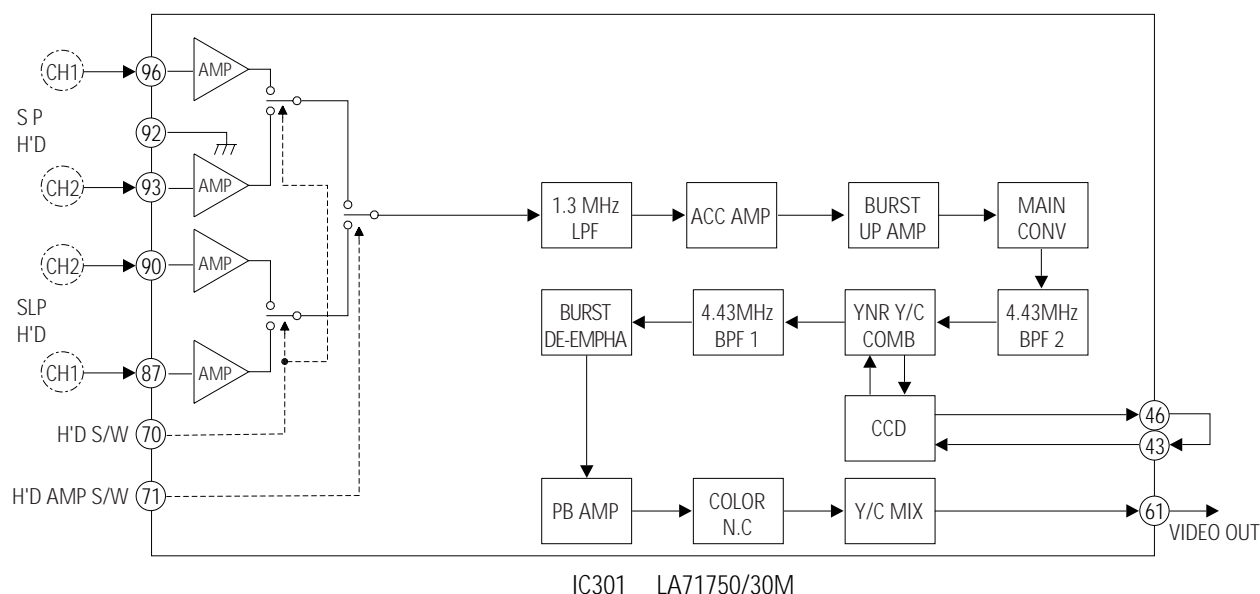


Fig. 13-24 Chrominance Playback Process

1) Outline

Fig. 13-24 shows the chroma signal playback system.

The FM signals picked up by the CH-1 and CH-2 video heads are supplied to the pre-amp block.

The FM signal from CH-1 and CH-2 are alternately selected by the switch and output signal as a continuous signal. Goes to the ACC amp through the 1.3MHz LPF. The 1.3MHz LPF is used for passing only down converted 627KHz chroma signal in the playback mode. The ACC amp stabilizes the 627KHz color signal level.

The output color signal from amp then enters the main converter circuit. In the main converter circuit this signal is mixed with the 5.06MHz phase shifted carrier signal and converted into 5.06MHz + 627KHz signals.

2) Main Converter

Inside of IC, the main converter converts the 627KHz rotational chroma signal to a 4.43MHz non-rotational signal. The two inputs of this main converter are the 627KHz signal, which comes from the output of the ACC, and a 5.06MHz which has the same rotational phase as the 627KHz signal. It is important that the rotational phase of the 5.06MHz signal is the same direction as the 627KHz playback chroma signal. To obtain the 4.43MHz non-rotational stable signal, the same direction rotational signal should be mixed with the rotational chroma signal.

During the conversion process, the phase is also mixed by the frequency. Therefore, when 627KHz is subtracted from 5.06MHz, the result is the non-rotational 4.43MHz stable signal. The output signal of the main converter goes to the 4.43MHz BPF. In the 4.43MHz BPF, the conversion noise ($5.06\text{MHz} + 627\text{KHz} = 5.7\text{MHz}$) is rejected and the 4.43MHz color signal goes to the comb filter.

In the comb filter, the crosstalk components due to the adjacent track are eliminated and the color signal is applied to PB-AMP, BURST De-Emphasis, Killer and are applied to LUMA and CHROMA mixer input through the CNC block.

13-5 Hi-Fi Audio

(1) Outline

Hi-Fi circuit consists of HiFi audio LPF, VCO, BPF, FM detect circuit and switching noise compensator, PRE-AMP etc. Linear audio consists of an ALC circuit, REC EQ circuit and a PB EQ circuit.

Hi-Fi and Linear audio share the same input selector, output selector and mute circuit.

1) REC Mode (L-CH Only)

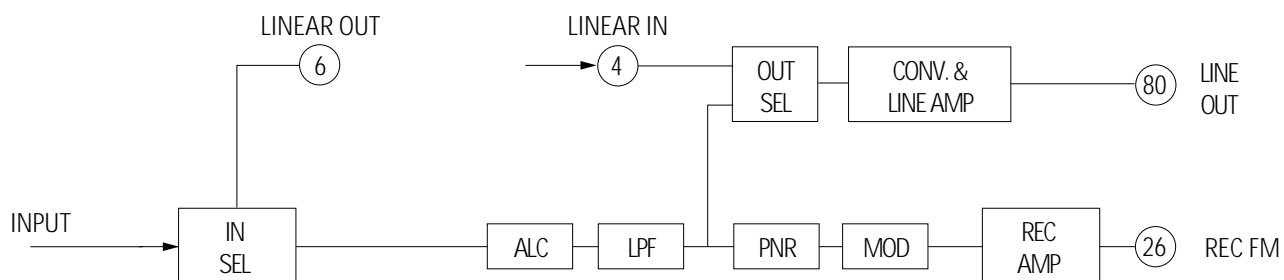


Fig. 13-25 REC Mode (L-CH Only)

2) PB Mode (L-CH Only)

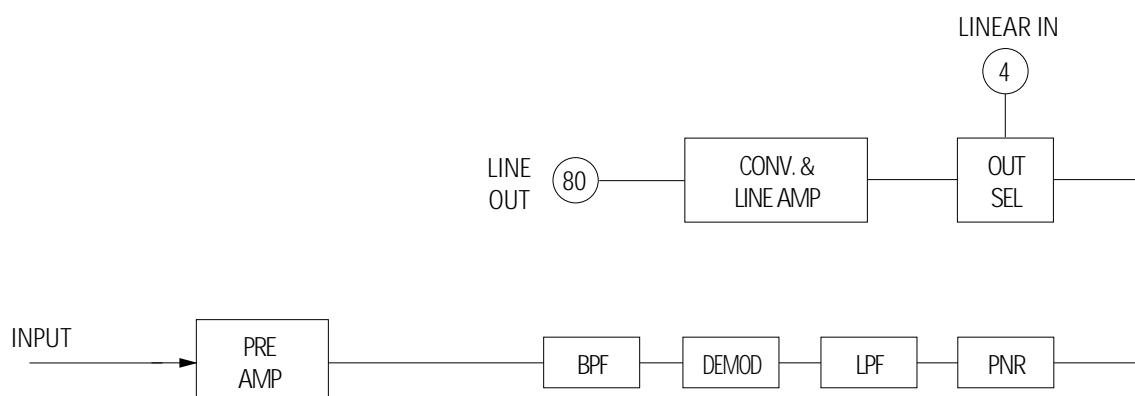


Fig. 13-26 PB Mode (L-CH Only)

(2) Block Description

1) Input Selector

Input selector outputs 1 signal from 4 different signals received. It outputs 1 selected signal from tuner, rear, front.

2) Normal(Linear) Selector

Two signals, L-CH and R-CH are inputted to Hi-Fi IC. But, linear audio is capable of receiving only one signal. Therefore the 2 input signals must be selected. Usually, the outputs are mixed signals of L-CH and R-CH unlike the input selector, the normal selector does not amplify the selected signal.

3) Output Selector

It selects to output Hi-Fi L-CH, Hi-Fi R-CH, LINEAR and MIX(Hi-Fi+LINEAR) signals with the final output IC pin 78(R-CH) and pin 80(L-CH).

4) Output ALC(Convertoer)

ALC is used because when the input level of RF converter gets bigger, it shows up as noise on the screen. But, this block is not used in this model (ALC OFF)

5) PNR(Peak Noise Reduction)

It is a type of emphasis, de-emphasis function to eliminate noise during modulation / demodulation. PNR operates as that of VHS FORMAT to reduce noise.

6) Audio Limiter

Before modulating the signals from PNR block, it limits signals exceeding the size limit to a max deviation of $\pm 150\text{KHz}$.

7) VCO(Voltage Control Oscillation)

It is a modulation function that oscillates 1.3MHz(L-CH) and 1.7MHz(R-CH)

8) RF LPF

It is a function to eliminate the harmonic components of Hi-Fi carrier formed during VCO, which may affect other block. Its pass-band is approximately 2MHz.

9) MIXER

It mixes the Hi-Fi carrier formed in L-CH and R-CH. However, due to the frequency difference between L-CH and R-CH, when an equal amount of R-CH is recorded to tape, R-CH is much smaller than L-CH. Therefore, the R-CH output is approximately 10dB bigger than L-CH.

10) Current Amp

It is the final amplifier which changes the size of Hi-Fi envelope.

11) AGC(Auto Gain Control)

It maintains uniform size of Hi-Fi envelope, which is inputted by pre-amp in play back mode.

12) BPF(Band Pass Filter)

L-CH and R-CH each has BPF. The center frequency is same as carrier frequency. It is used to receive only Hi-Fi carrier from all signals inputted to pre-amp.

13) SW Noise Compensation

Unlike linear audio, instead of using fixed head, drum heads are used, which creates halting points. However, in order for the audio to be headed continuously, the damages from halting points are modulated, which creates noise. SW noise compensation is a block to minimize this particular noise.

14) Hold Pulse

It makes standard signal(Pulse) to compensate SW noise.

15) DET(Hi-Fi/LINEAR)

From the Hi-Fi envelope inputted from pre-amp, it decides whether the signal passing through L-CH BPF is Hi-Fi or LINEAR tape it's size(the signal passing through BPF is below 10mVpp, it is not Hi-Fi, therefore, it output linear)

16) DOC(Drop Out Compensation)

If demodulation is conducted without properly treating the damage on Hi-Fi envelope caused by scratch on the tape, noise occurs.

In order to improve this noise occurrence, DO DET compensates the drop-out using the same method of compensating the switching noise when the damage on the envelope ranges 10~15mVpp.

17) ENV DET

To obtain optimal tracking, envelope must be peak to peak and micom should be in DC. It is a function to convert Hi-Fi envelope to DC. If it is lower than 0.8V at micom, it sends linear mode data to HiFi IC.

18) Serial Data Decoder

It receives I2C BUS to enable the operation of inner block and decodes into serial data.

13-6 Linear Audio

(1) Block Diagram

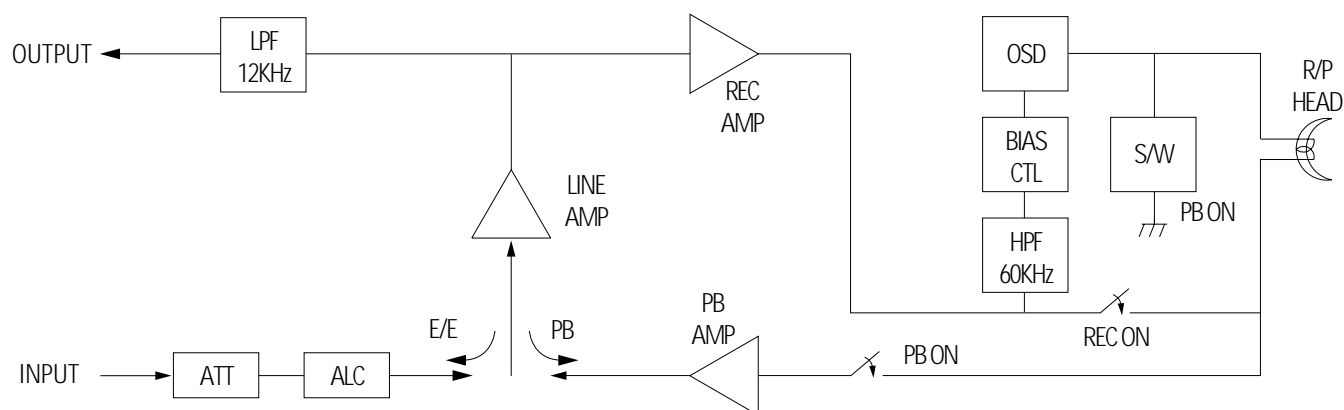


Fig. 13-27 Block Diagram

(2) Block Description

1) ATT (Attenuation)

Line amp is shared between PB mode and E/E mode, which reduces the recorded signal by 20dB and resistor.

2) ALC (Auto Level Control)

If the signal level is lower than the reference signal (-6dBm) level, the output signal will equal the input signal. However, if the input signal is higher than the reference signal, the output will not equal the input and will generate uniform signal.

* ALC Application Purpose : Since linear audio is in AM (amplitude modulation) and uses magnetic recording device, it only records limited size and as the size of input signal increases, distortion increases. To prevent this occurrence, make sure the signal does not get bigger even if the level of distortion repeatedly increases.

3) LINE AMP

Line amp's gain is approximately 23dB. The purpose of the line amp is to amplify to 68dB in order to obtain the recorded signal on the tape during playback. As the amp gain increases, the passband decreases, which enables the amplification of low frequency. However, it is impossible to amplify frequency of 10KHz to 68dB with just 1 OPAMP. Therefore, to satisfy frequency and gain.

Line amp must be constructed into 2 steps of OP AMP. (gain is fixed within IC)

4) 12KHz LPF

There are various noises to signal output. The loudest noise is the "Video SYNC Frequency" of 15.734KHz. In order to eliminate the "Video SYNC Frequency", "LPF" and "TRAP" are combined to "LPF".

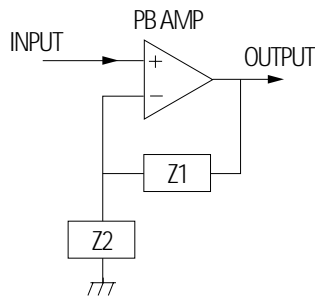
5) PB AMP

Fig. 13-28 PB Amp

The diagram to the left is the playback amp and the gain input/output are as follows.

$$A_v = 1 + \frac{Z_1}{Z_2} \approx \frac{Z_1}{Z_2}$$

The playback characteristic of VHS format can be satisfied by using Z_1 , Z_2 in the above equation.

PB amp gain should be designed to be approximately 45dB (1KHz).

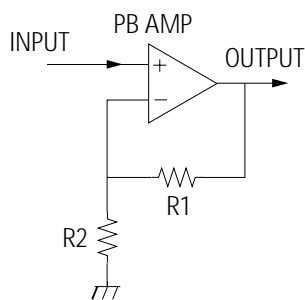
6) REC AMP

Fig. 13-29 REC Amp

The diagram to the left is REC AMP. The amp gain is approximately 14dB. R_1 and R_2 that determine the gain is located inside the IC.

It is uniform and independent to frequency. Frequency characteristics should be considered when designing rec amp. The REC amp should be the opposite to playback characteristics.

7) OSC (Oscillation)

Oscillation frequency is 70KHz. It's size is approximately 40Vp-p. it operates on record mode. It is supplied to audio erase head and full erase head used to erase already recorded signals.

Also, it conducts "AM (Amplitude Modulation)" using oscillation signals.

8) BIAS Control

Output level changes according to the impedance of F/E, A/E and R/P head connected to the coil.

9) 60KHz HPF

There must be standard signal for bias control and that signal uses HPF only to obtain oscillation signal that comes through R/P head.

10) S/W

The switch opens when recording, shorts during playback and exterior transistor is used.

13-7 TM

(1) Outline

RF and frequency synthesized tuning system

General description : The receiving circuit consists of both ANT input and output circuits, channel selection circuit, PIF circuit and SIF circuit. The receiving circuit selects a desired broadcast signal from TV signals induced on an antenna and sends stable video and audio signals to their respective processing circuits. The output signals from the video and audio circuits are converted into a conventional TV signal modulated for channel 3 or channel 4 by an RF modulator so that the signal can be received by conventional TV receivers.

(2) Tuner modulator block

As explained, this model is designed in one package to contain a RF MODULATOR BLOCK, TUNER BLOCK AND IF DEMODULATOR BLOCK. Its size is greatly reduced and other noise interference can be minimized to make performance high.

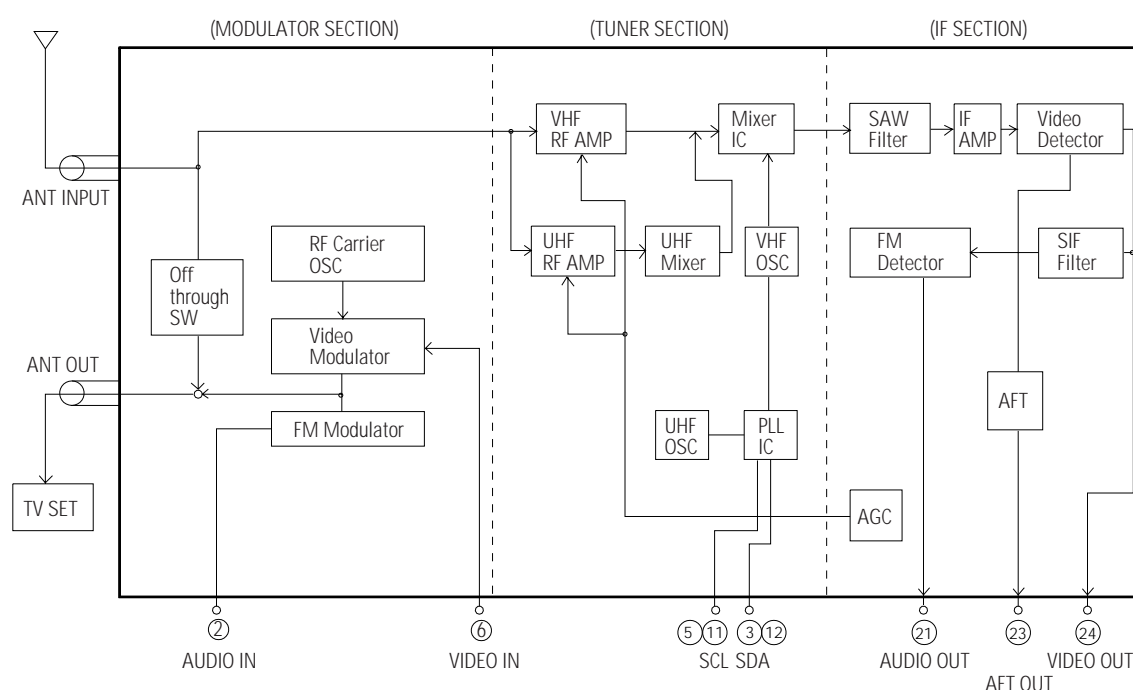


Fig. 13-30 Tuner/demodulator Block Diagram

(3) Modulator Section

- A. RF Modulator generates, from a baseband video and audio signal, PLL frequency synthesized RF TV channel signal in VHF band. (3ch = 61.25MHz, 4ch = 67.25MHz)
- B. PLL synthesized audio FM (4.5MHz).
- C. The 4.43MHz reference frequency for PLL can either be generated internally or input from an external source.

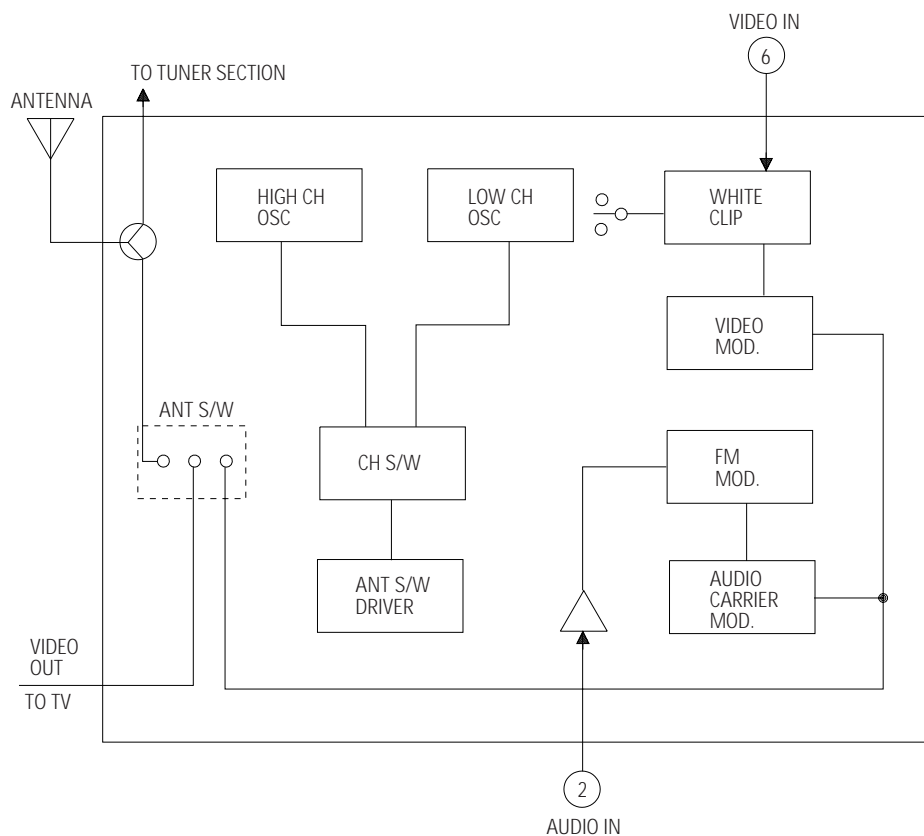


Fig. 13-31 Modulator Section Block Diagram

(4) Tuner Block

A. Low pass filter & high pass filter

This consists of IF trap circuit and UHF & VHF separation circuit. If the input signal is IF(45.75MHz), this filter prevents interference.

B. Single tune & RF AMP

This consists of a filter circuit, RF AMP, impedance conversion circuit, image trap and a single tuning circuit. It prevents noise and other interference signals. RF AMP is controlled by AGC come from IF DEMOD block.

C. Double tune

It consists of a double tuning circuit to improve rejection characteristic which results in a better band characteristic.

D. MOP IC (Mixer, OSC, PLL)

It consists a VHS and UHF OSC and mixer circuit. We applied a double balance mixer to have better rejection characteristic, it shows especially various beat characteristic.

It selects channels and contains charge pump band driver. The minimum step standard frequency 27.97KHZ.

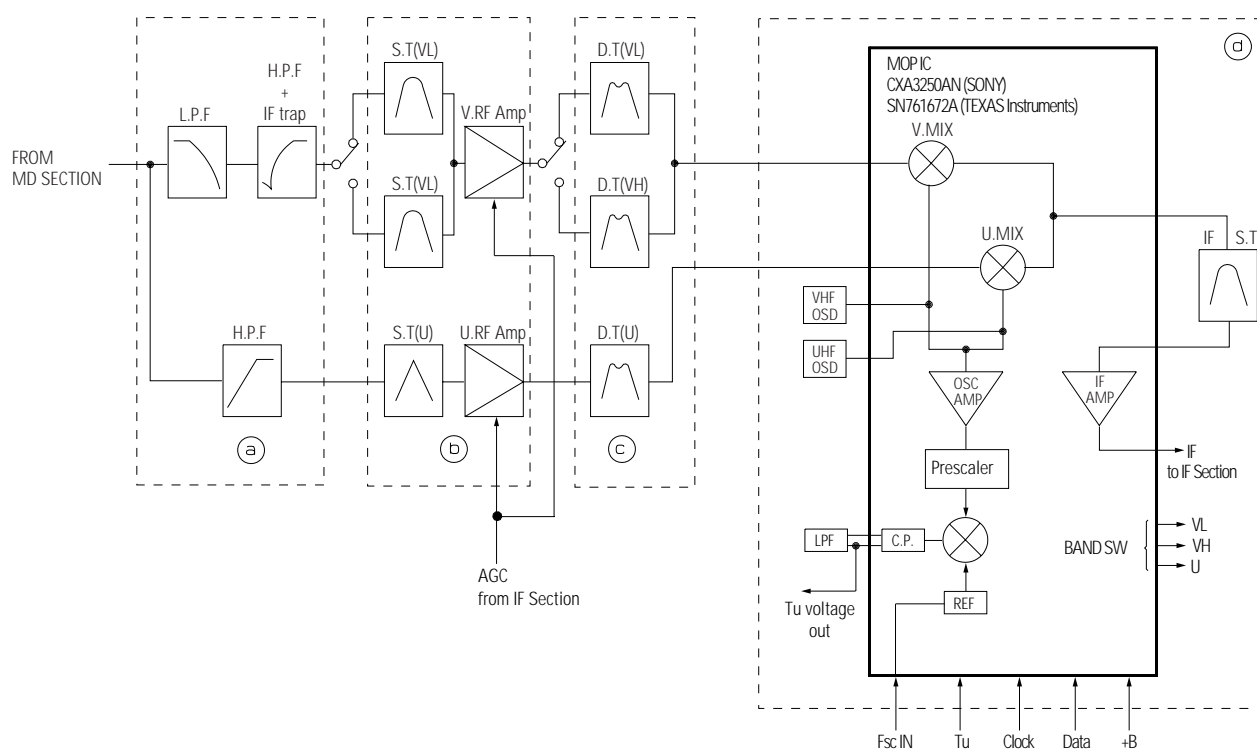


Fig. 13-32 Tuner Section Block Diagram

(5) IF Block

A. SAW FILTER

It passes only needed band of the signal that is converted to IF frequency and decrease other band to minimize the effect of adjacent channel.

B. IF AMP

IF signal, which is selected in SAW FILTER, is amplified in IF amp frequency enough to be detected. The IF AMP has parallel inputs & outputs structure and consists of 3 series step AMP. Each step has about 20dB gains. These gains are controlled by AGC voltage has maximum 63dB attenuation range.

C. RF AGC CONTROL

It is adjusted to determine RF AGC working point in tuner.

D. FM DETECTOR

After removing AM signal in the limiter AMP, amplified SIF signal is applied FM detector.

This FM detector is PLL detecting type.

E. AFT DETECTOR

AFT automatically controls the OSC frequency in the tuner, so that it retains a constant level.

It is a quadrature detection type. The carrier, which is detected from video det is directly input to AFT detector. The 90 degree delayed phase signal is input at the same time to AFT detector and, the results come out.

Detected AFT voltage is amplified by DC AMP and then applied to pin 13.

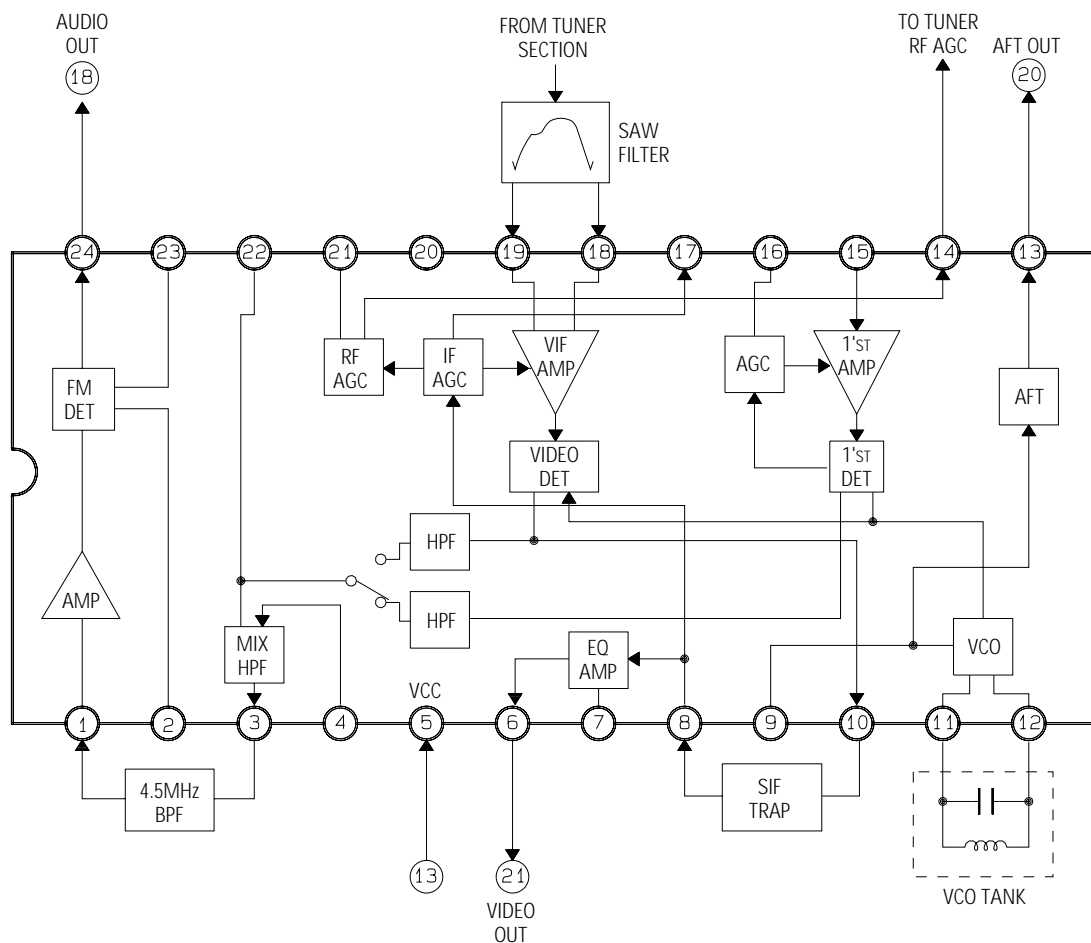


Fig. 13-33 IF Ssection Block Diagram

13-8 MTS

1) Outline

The Multiplex signal that come from Tuner / demode block(TM block IF DEMOD) enters into the MTS IC11 pin and sap or stereo signal can be detected. The components of the signal are roughly separated 4 areas(stereo,dbx,matrix and sap)

2) STEREO BLOCK

(a) L+R(Main)

After the audio multiplexing signal input from SIF (pin48) passes through VCA, the SAP sinal and telemetry signal are suppressed by STEREO LPF. Next,the pilot signals are canceled.

Finally,the L-R signal and SAP signal are removed by MAIN LPF,and frequency characteristics are flattened (de-emphasized) and input to the matrix

(b) L-R(SUB)

The L-R signal follows the same course as L+R before the pilot signal is canceled. L-R has no carrier signal,as it is a suppressed-carrier double side band amplitude modulated signal(DSB-AM modulated). For this reason,the pilot signal is used to regenerate the carrier signal(quasi-sine wave) to be used for the modulation of the L-R signal.

3) SAP BLOCK

SAP is an FM signal using 5fh as a carrier as shown in the Fig(base band spectrum) First,the SAP signal only is extracted using SAP BPF. Then,this is subjected to FM detection.

Finally,residual high frequency components are removed and frequency characteristic flattened using SAP LPF,and the SAP signal is input to the dbx-TV block.

4) dbx-TV BLOCK

Either the L-R signal and SAP signal input is selected by the mode control and input to the dbx-TV block.

The input signal then passes through the fixed de-emphasis circuit and is applied to the variable de-emphasis circuit.

The signal output from the variable de-emphasis circuit pass through an external capacitor and is applied to VCA(Voltage Control Amp) Finally, the VCA output is converted from a current to a voltage using an operational amplifier and then input to the matrix.

The variable de-emphasis circuit transmittance and VCA gain are respectively controlled by each of effective value

detection circuits. Each of the effective value detection circuit passes the input signal through a predetermined filter for weighting before the effective value of the weighted signal is detected to provide the control signal.

5) MATRIX

The signals(L+R,L-R,SAP) input to "MATRIX" become the outputs for the ST-L,ST-R,MONO and SAP signals according to the mode control.

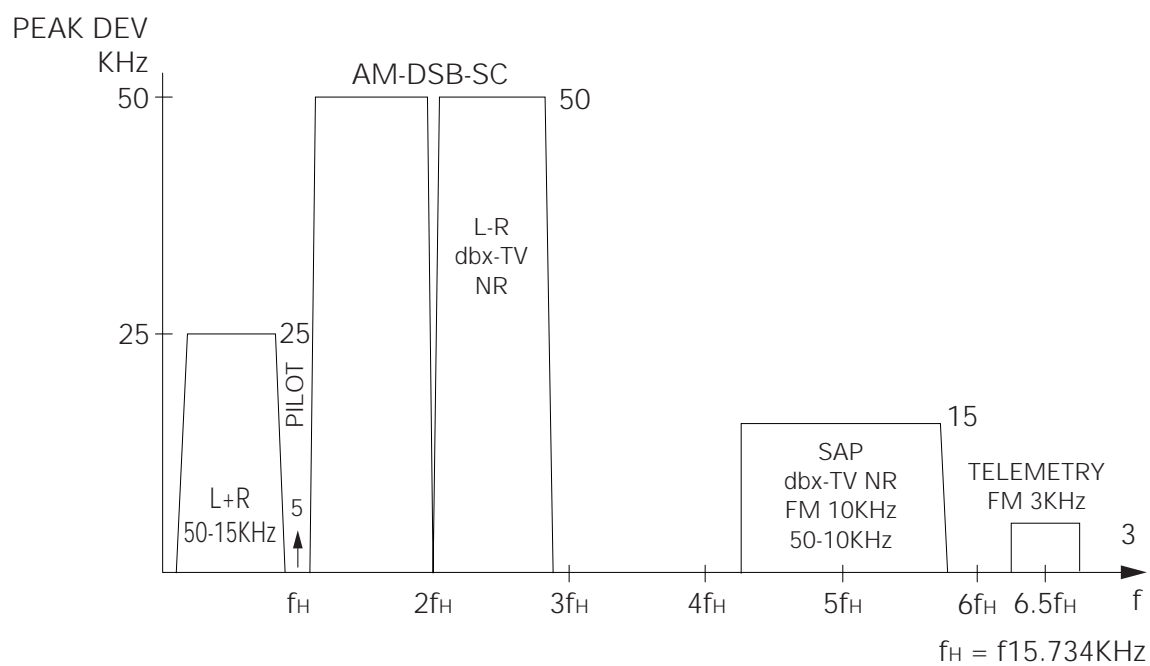


Fig. 13-34 Base Band Spectrum

13-9 OSD

The on screen display circuit consist of a character generator decoder, video mixer, sync separator and sync generator, sync detector circuit.

The data is decoded and generates characters in syncro with composite video signal applied pin 19.

Also the sync detector circuit discriminates the presence of a video signal by detecting sync, if no sync is detected, a blue screen is displayed. In other word, the OSD circuit displays character on the video when there is a video signal or on blue screen when there is no video signal. (No sync).

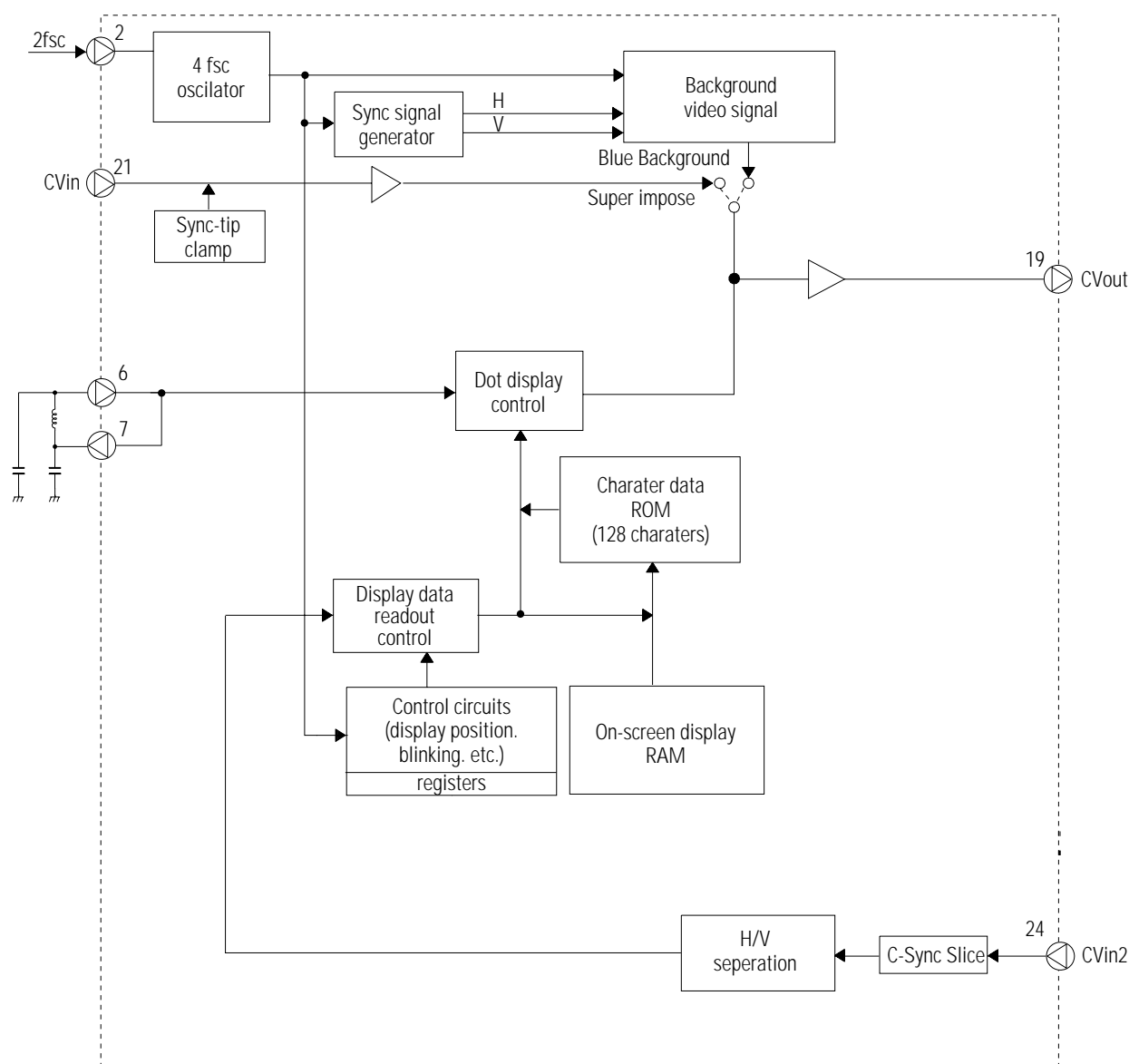


Fig. 13-35 Block Diagram

13-10 SECAM

(1) REC Mode

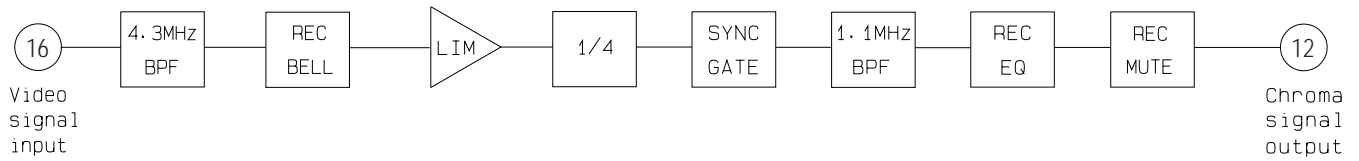


Fig. 13-36 Signal flow in REC mode

Video signals which input to Pin 16, pass 4.3MHz BPF, unnecessary component (ex : sync signal) is removed, and take component of chroma signal. And to be flat the characteristics when it is sending by REC-BELL circuit. This REC-BELL circuit is automatically adjusted to be 4.286MHz for center frequency. After that, the pulse width is limited by limiter amplifier pass the 1/4 divided circuit and converted to 1/4 for chroma signal frequency. As for converted signal, the noise of non-signal parts of sync signal is amplified by limiter amplifier, in order to be remove components of the sync signal generates by sync gate circuit. Also this signal is squarewave, and contains unnecessary components, at first, through 1.1MHz BPF and next input to REC-EQ. REC-EQ has the same characteristics of BELL characteristics, automatically adjust to be 1.0715MHz for center frequency. Afterwards, unnecessary components around the sync signal are muted, low chroma signal is output to Pin 18 after through Buffer. This mute circuit also has the function of remove unnecessary component during vertical sync signal and output control owing to Pin 1.

(2) PB Mode

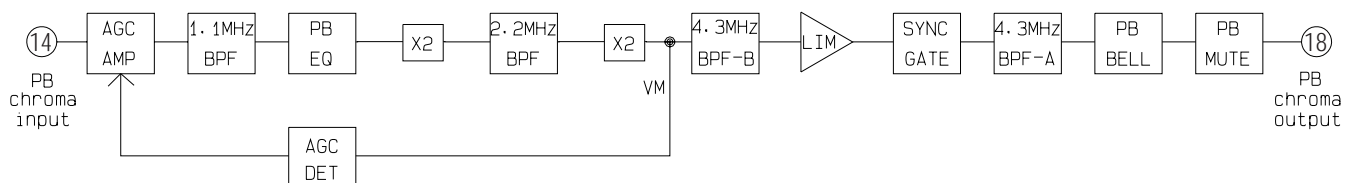


Fig. 13-37 Signal flow in PB mode

The signal which input from Pin 14, at first enter AGC amplifier and adjust for level. Gain of this AGC amplifier is controlled to be fixed the 4fsc clock generator with PLL circuit of output level (VM) which shows below. Thus, pass the 1.1MHz BPF, remove unnecessary components, input to PB-EQ which has 1.1MHz Anti-BELL characteristic. This center frequency of PB equalizer, automatically adjusted to be 1.0715MHz. Next, enter 4fsc clock generator with PLL circuit. +4.3MHz BPF remove unnecessary, component of frequency generate in 2fsc clock generator owing to limiter amplifier are cleaned by performance of sync gate circuit. This signal has a rectangle waveform, for contain unnecessary components of frequency, due to through 4.3MHz BPF, next input to PB-BELL. PB-BELL automatically adjust to 4.286MHz of center frequency, and return to BELL characteristics when it is sending.

(3) Block Diagram

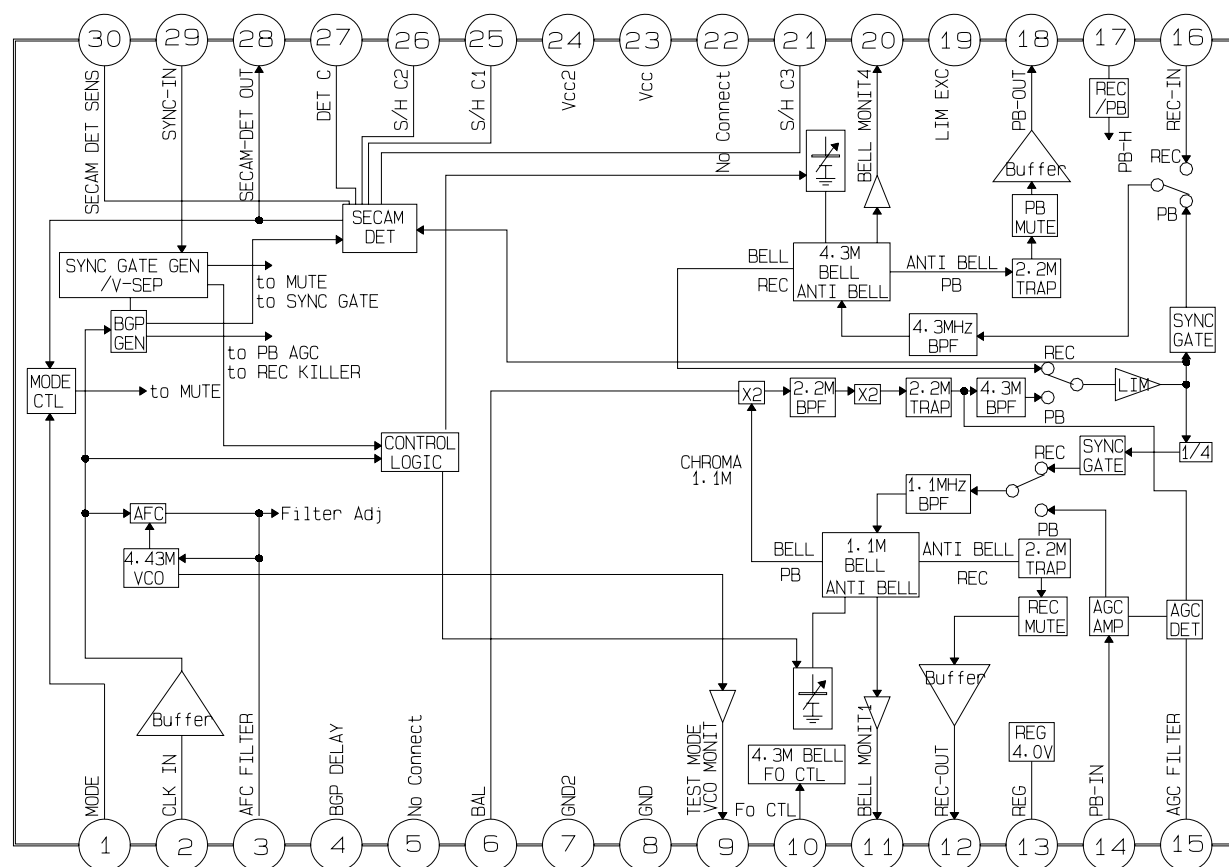


Fig. 13-38 LA70100M Block Diagram

13-11 Input-Output

The output signal of DVD and VCR are inputted to IC802.
Because has no copy function.
The output signals are determined by only IC802.

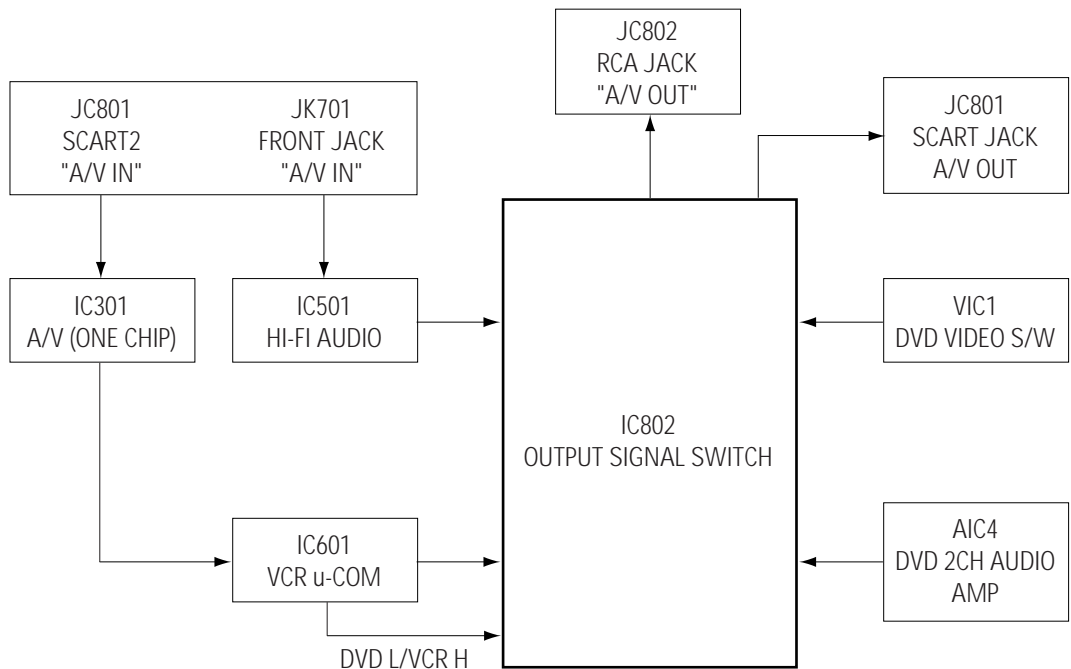


Fig. 13-39 Block Diagram

Table 13-4 : Output Signal Switching Condition

Block	Input Signal		Input Pin	Output Signal	Output Pin	9, 10, 11 CTL Level	Output Signal Type
VCR	Video		Pin 13	Video	Pin 14	High	VCR Video
	Audio	L	Pin 1			Low	DVD Video
		R	Pin 3	Audio L	Pin 15	High	VCR Audio L
DVD	Video		Pin 12			Audio R	Pin 4
	Audio	L	Pin 2	High	VCR Audio R		
		R	Pin 5	Low	DVD Audio R		

13-12 DVD System Control

(1) Outline

The main micom circuit is composed of 1MB flash memory (DIC2) to booting system and data saving, 64Mbit SDRAM (DIC5) for temporary data read and write

The Micom (U1,ES6629) mounted in main board analyzes the key commands of front panel or instructions of remote control through communication with Micom (IC601) MPD790006GF of VCR and controls the devices on board to execute the corresponding commands after initializing the devices connected with micom on board at power on.

(2) Block Diagram

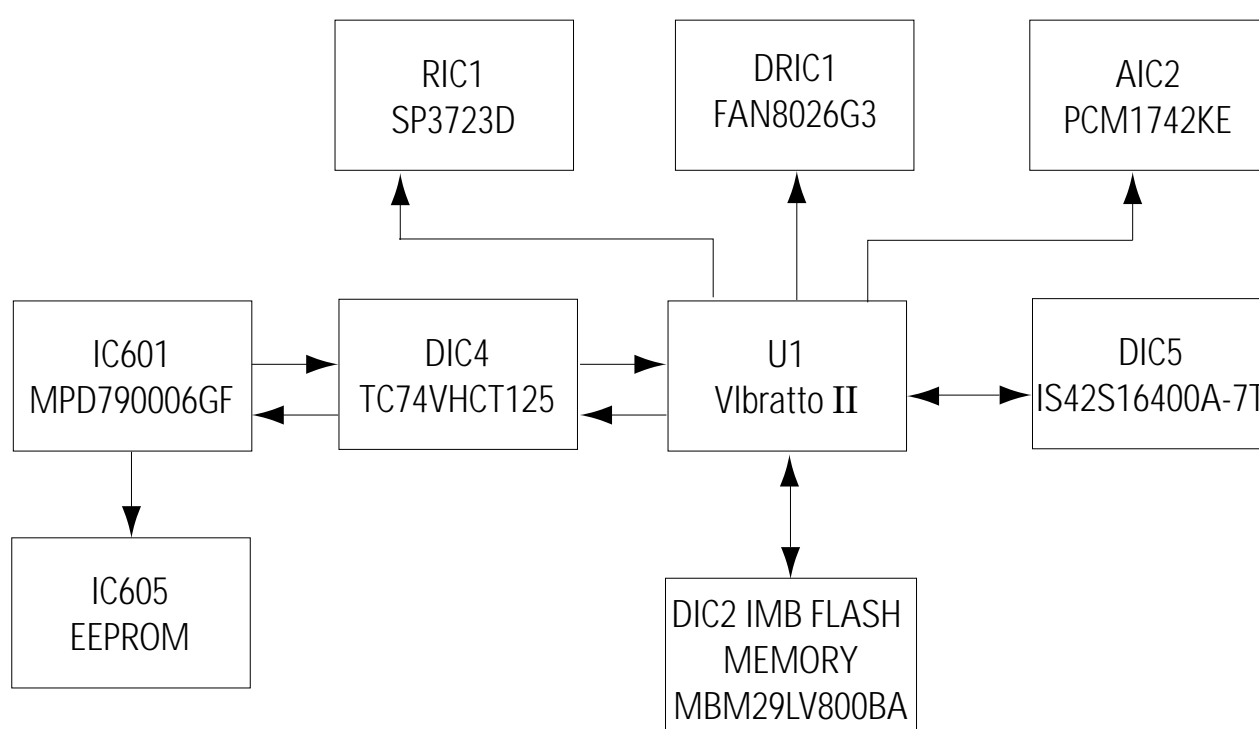


Fig. 13-40

13-13 DVD RF

(1) RIC1 (SP3723D)

The main function of this IC is control the DVD RF signal by equalization.

This IC has a function “(laser power control). This function makes a RF signal to generate a RF signal from pickup by stable control. And the communication with U1(main micom) make it distinguish the disc and check several signal ; tracking , defect , etc...

(a) Basic

SP3723D 5V/3.3V and reference Voltage1.5V.

(b) RF signal

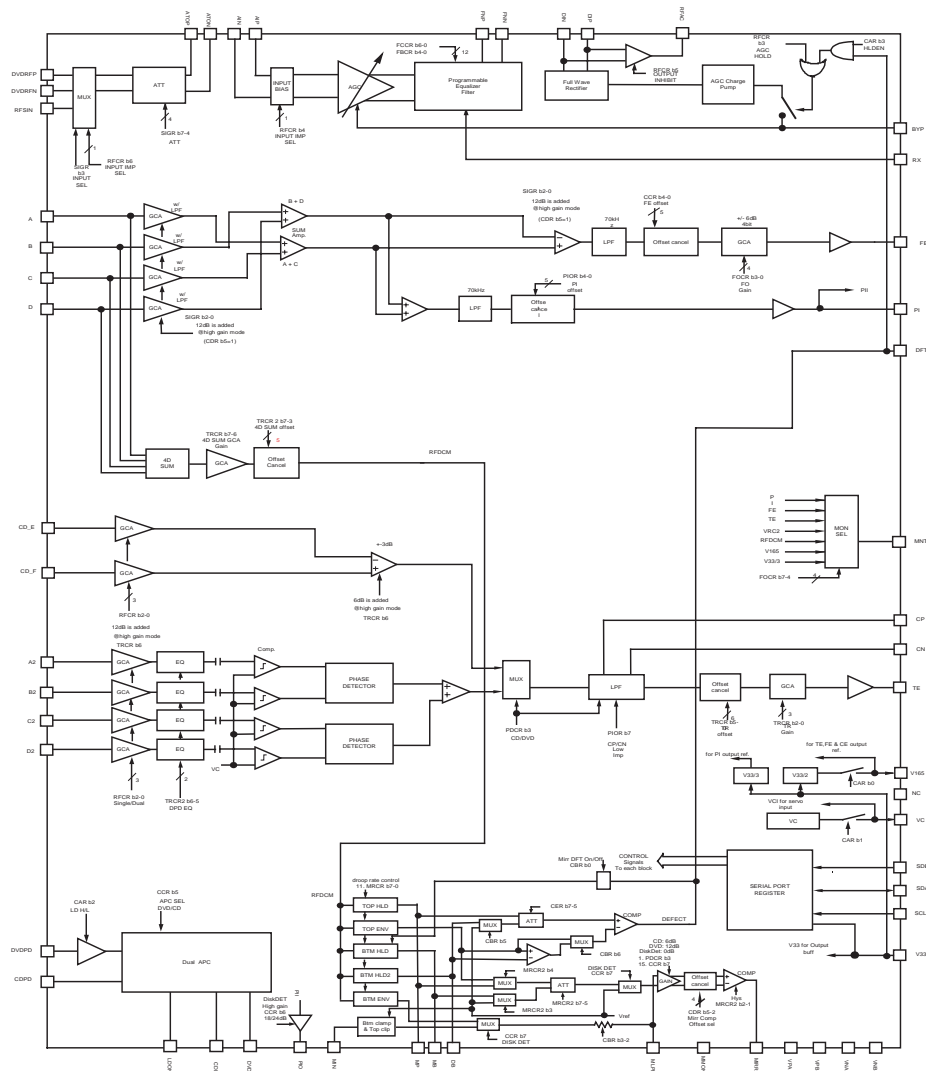


Fig. 13-41

This diagram shows the flow of signal generated by the pickup. A, B, C, D signals detected from pickup are converted in to RF syral ($A+B+C+D$) via rf summing AMP.

13-14 DVD Servo

(1) Outline

SERVO system of DVD is Composed of Focusing SERVO, Tracking SERVO, SLED and CLV SERVO (spindle motor servo)

- 1) Focusing SERVO : Focuses the optical spot output from object lens onto the disc surface. Maintains a uniform distance between object lens of Pick-up and disc (for surface vibration of disc).
- 2) Tracking SERVO : Make the object lens follow the disc track in use of tracking error signal (created from Pick-up).
- 3) SLED Linked SERVO : When the tracking actuator inclines outwardly as the object lens follows the track during play, the SLED motor moves slightly (and counteracts the incline).
- 4) CLV SERVO (DISC Motor Control SERVO) : Controls the disc motor to maintain a constant linear velocity (necessary for RF signal).

(2) Block Diagram

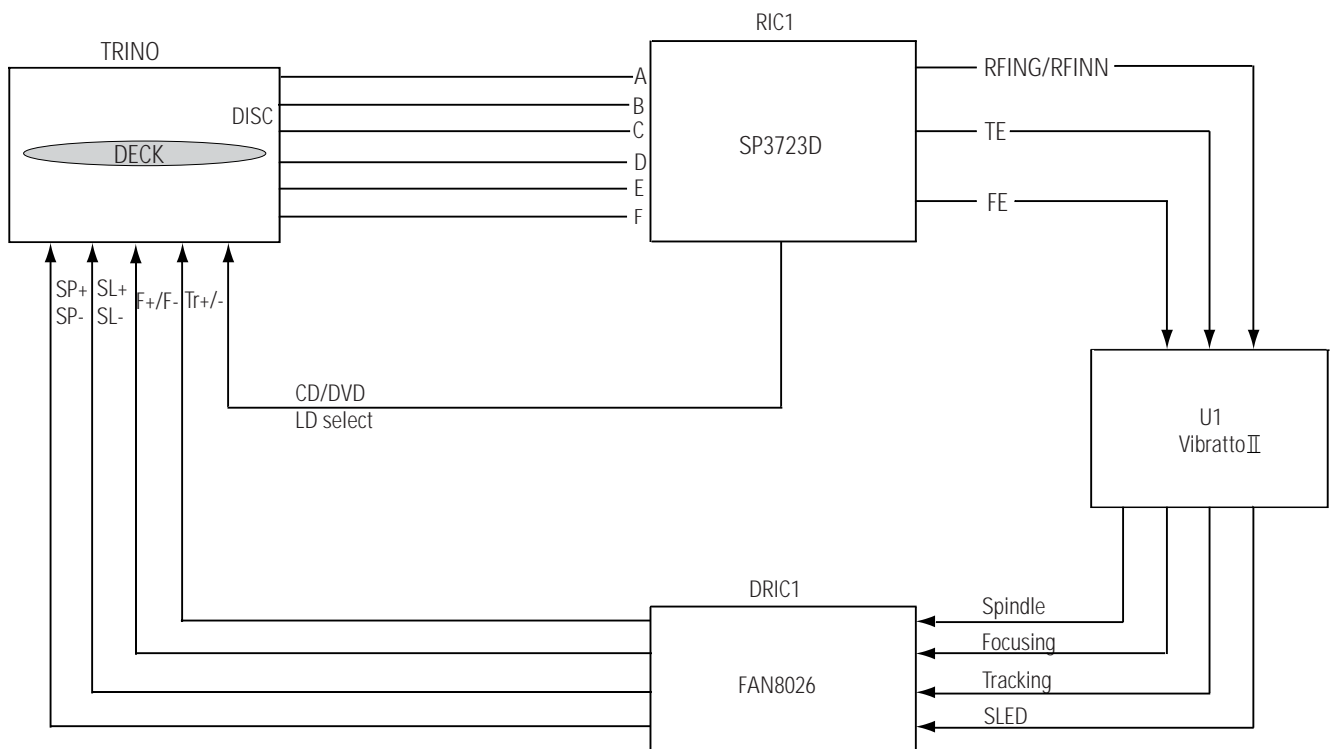


Fig. 13-42

(3) Operation

1) FOCUSING SERVO

(a) Focus Input

The focus loop is changed from open loop to closed loop, and the triangular waveform moves the object lens up and down (at pin 172 of U1 during Focus SERVO ON.) At that time, S curve is input to pin 142 of U1.

SBAD (pin 38 of RIC1) signal, summing signal of PD A, B, C, D, is generated, and zero cross(1.5V) point occurs when S curve is focused and SBAD signal exceeds a preset, constant value. The focus loop is changed to closed loop, and the object lens follows the disc movement, maintaining a constant distance from the disc. (these operations are same in CD and DVD).

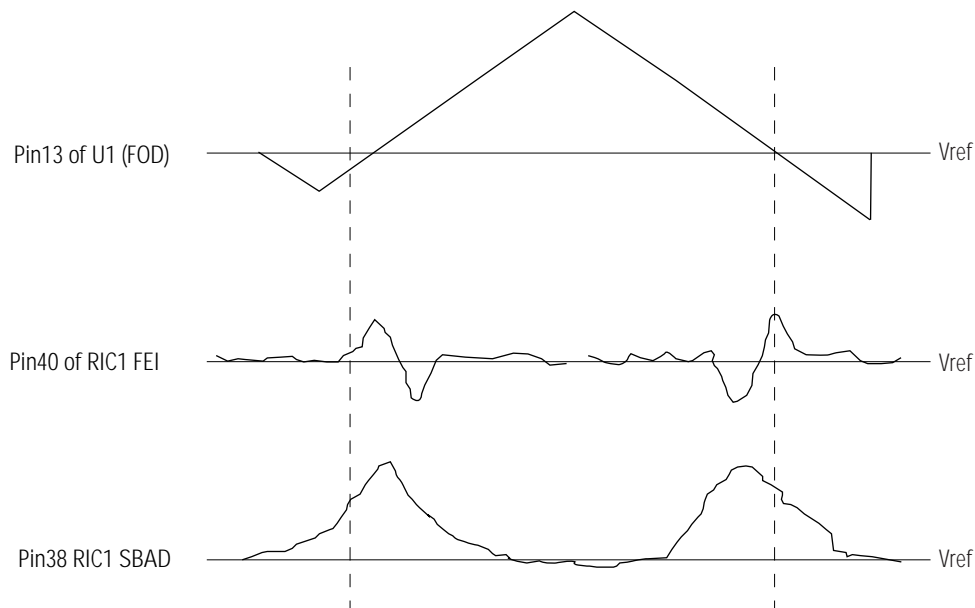


Fig. 13-43

(b) Play

When focus loop closes the loop during focus servo on, pin 142 of U1 are controlled by VREF voltage (approx. 1.5V), and pin 40 of RIC1 are approximately 1.5V.

2) TRACKING SERVO

A. NORMAL PLAY MODE

❶ For DVD

Composite : The signal output from PD A, B, C, D of Pick-up, the tracking error signal (pin39 of RIC1) uses the phase difference of A+C and B+D in RIC1, and inputs to terminal 139 of U1. Pin 139 of U1 is controlled by VREF(approx. 1.5V) during normal play.

Meanwhile, DVD repeats the track jump from 1 to 4 in inner direction at normal play (because data- read speed from disc is faster than data output speed on screen).

❷ For CD, VCD

Receive the signal output through E, F of Pick-up, from RIC1. The tracking error signal is similar to DVD.

B. SEARCH Mode :

Search mode : Fine seek, (Moving the tracking actuator slightly little below 255 track) and coarse search, moving much in use of sled motor. The coarse search will be described in sled linked servo and now, the fine seek is explained shortly.

If the object lens is located near target, cut off the tracking loop and give the control signal as many as desired count to move the tracking actuator via U1 pin 175 terminal (STRACK).

3) SLED LINKED SERVO

- Normal play mode

Move SLED motor slightly by means of DA signal in U1 pin 174, as the tracking actuator moves along with track during play. Control to move the entire Pick-up as the tracking actuator moves.

- Coarse search mode

In case of long-distance search (such as chapter search), U1 uses MIRR.

Then, read ID and compute the existing track count after input of next track.

If the existing track count is within fine seek range, tracking begins using fine seek.

4) CLV SERVO (DISC MOTOR CONTROL SERVO)

Input RF signal (from Pick-up) to U1 pin 154, 155

Detect SYNC signal from RF in U1, and output DA signal to U1 pin 171 for constant linear velocity.

13-15 DVD Data Processor

(1) Outline

IC601 reset the DVD main micom U1, by 5 line communication.

When the DVD system setup, micom and flash memry communicate with each other and then DVD system is booted. After the flash set the system micomunicate with RIC1 and MIC1 by sequence.

RIC1 set the servo and moving SLED, focusing actuator to check the disc.

(2) Block Diagram

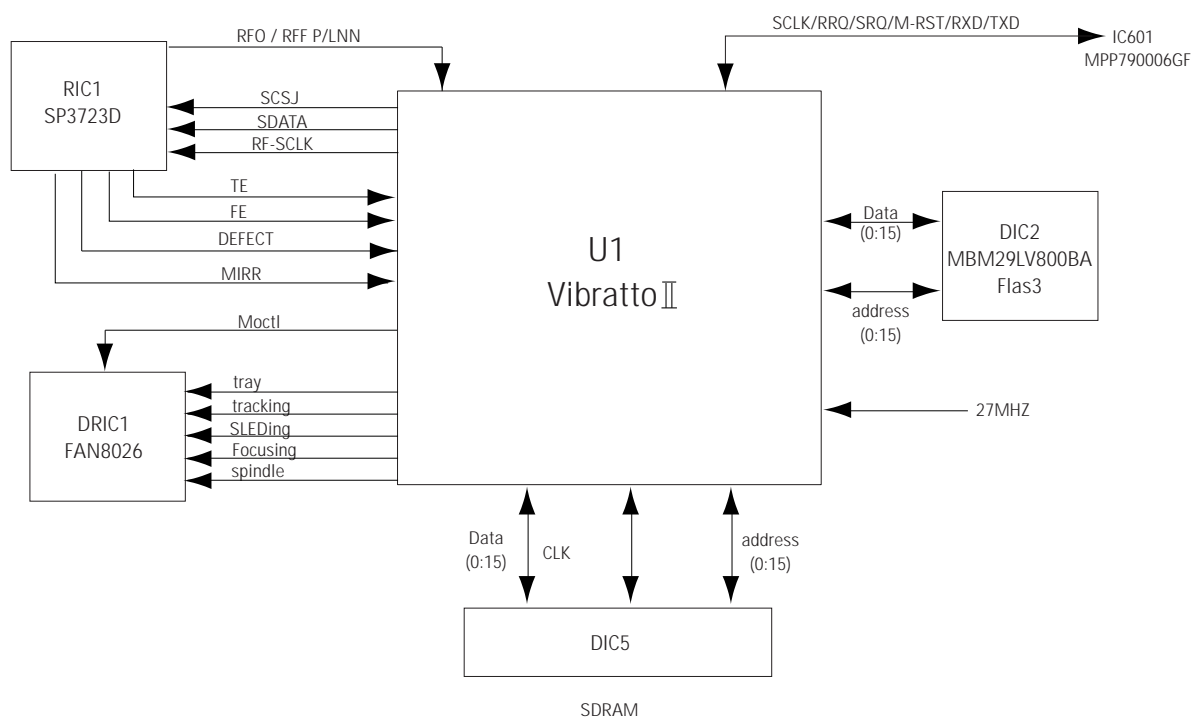


Fig. 13-44

13-16 DVD Video

(1) Outline

U1(A/V decoder with video encoder) diverges from the 27MHz crystal, then generates VSYNC and HSYNC. U1 does RGB encoding,copy guard processing and D/A Conversion of 8bit Video data internally inputted from video decoder block by Micro Process block.

Video signal converted into analog signal is outputted via amplifier of analog part.

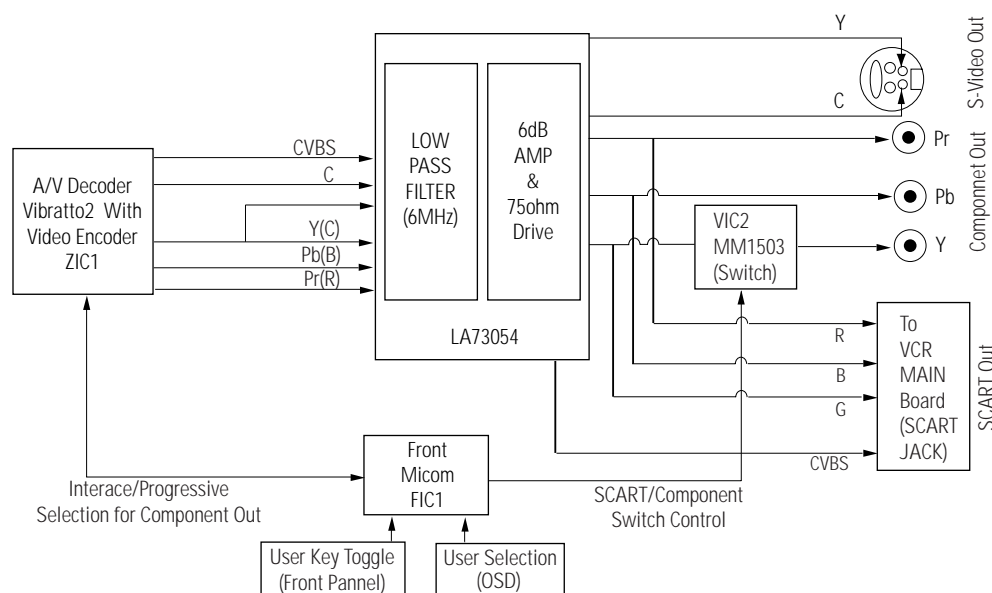


Fig. 13-45 Video output Block diagram

(2) NTSC/PAL Digital Encoder (VADDIS 5E ; Built in video encoder)

U1 inputted from pin2 with 27MHz generates HSYNC and VSYNC which are based on video signal. U1 is synchronous signals with decoded video signal and control the output timing of 8bit video signal of ITU-R601 format. The separate signal is encoded to NTSC/PAL by control of IC601.

The above signals, which are CVBS(Composite Video Burst Synchronized)/G(Green)/Y[PIN139],Y(S-Video)/B(Blue)/Pb[PIN145] and C(S-Video)/R(RED)/Pr[PIN151], are selectively outputted CVBS + S-Video, RGB/Component by User Control.

In Course of encoding, 8bit data can be extended to 10bit or more. To convert the extended data, U1 adopts 10bit D/A converter. U1 perform video encoding as well as copy protection.

(3) Video Amplifier (VIC1: LA73054)

VIC1 is 6dB amplifier. Based on CVBS signal, the final output level must be 2Vpp without 75ohm terminal resistance. Because the level of video encoder output is only 1.1Vpp, the level is adjusted with the special amplifier. When mute port of pin 5 is active "High", the output signal is "Muted". CVBS, Y(G) C, B(Pr), B(Pb) outputted from video encoder are inputted to pin 2,8,6,16,14 of VIC1. Amplified signals by +6dB are outputted via output terminals(RCA, S-Video,SCART)with 75ohm Resistance(VR2~VR11)

(4)RGB/Component output selection and Progressive output Control.

RGB/Component selection is controlled by user OSD Selection.

When LA73054 outputs RGB Video to SCART Terminal(in VCR main Ass'Y), Component terminals output no signal. When "DVD OUT" Menu in OSD is set to "S-Video" or Video RCA Component output is enabled.

Signal type of SCART output is determined by User OSD Selection, and Internal switching operation done by VIC2. When pin1 of VIC2 is "High", Component(interace/progressive) output is enabled, and when "Low", RGB(SCART Terminal)output is enabled.

When RCA Component output is enabled, Interace/Progressive Selection for RCA Component out is controlled by key input of Front Panel. Once Progressive output is selected, RGB SCART output is disabled unconditionally and RCA Component out is enabled regardless of current state.

When user cancel the "Progressive Video out" by Key input of front panel, video output type is returned to the same state before user select "Progressive output".

13-17 DVD Audio

(1) Outline

A/V decoder (U1 ; Vibratto[I]) is supply to DATA 0 for 2-channel mixed audio output.

The audio data transmitted from A/V decoder (U1 ; Vibratto[I]) are converted into analog signal via audio D/A converter and outputted via post filter and amplifier.

CD and VCD are outputted with only 2 channels audio data and transmit them to Data 0.

If DVD of multichannel Source disc, if is downmixed and transmit them to Data0.

If you want to listen to the multichannel output, you have to connect digital output with AC-3 amp or MPEG/DTS amp.

(2) Block Diagram

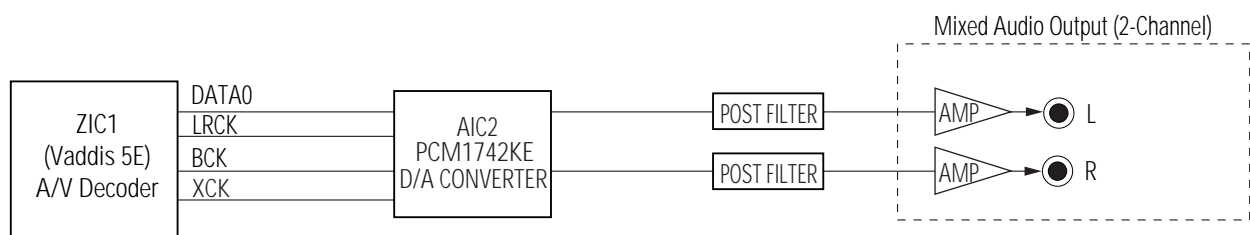


Fig. 13-46

(3) DVD Audio Output

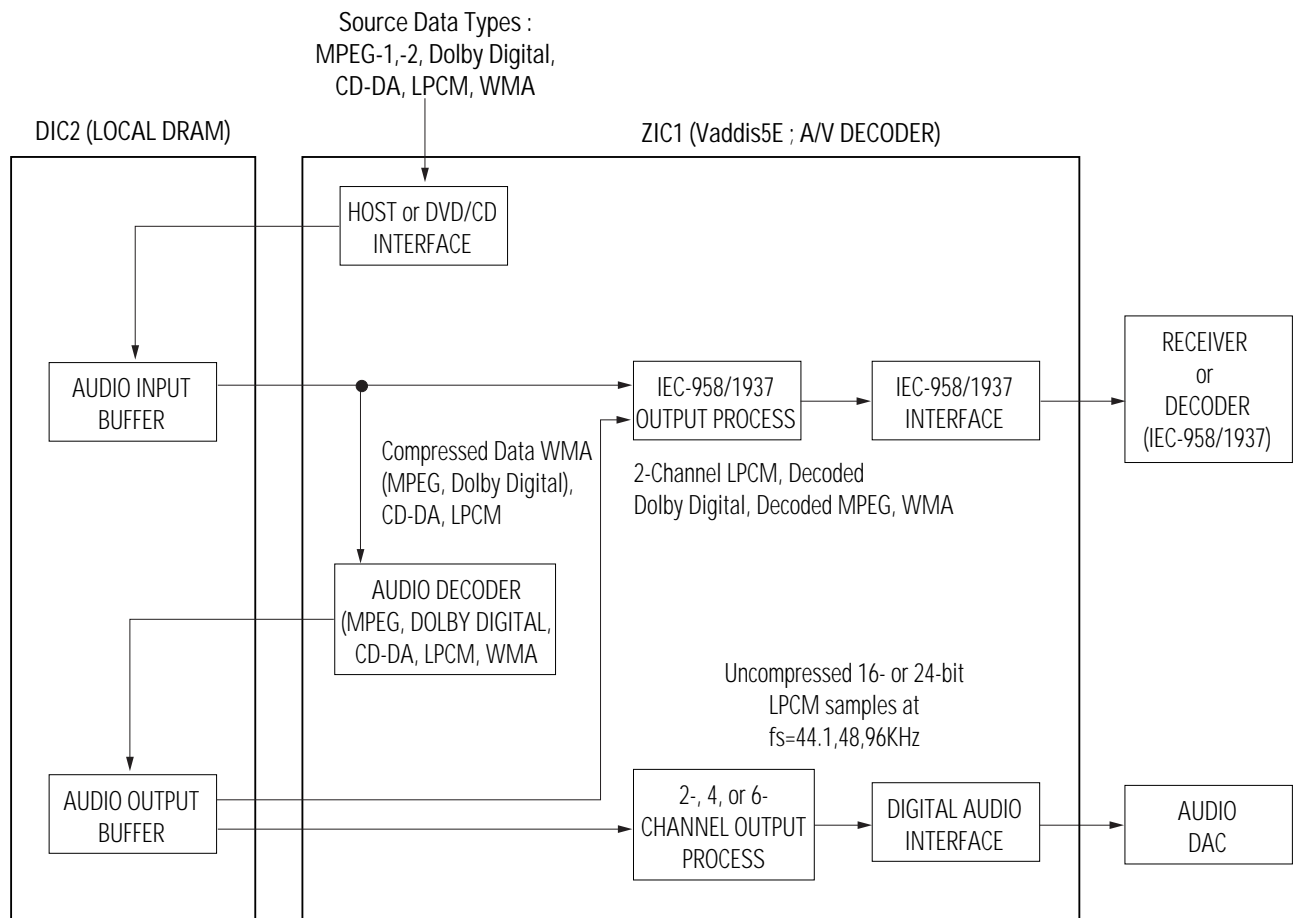


Fig. 13-47 Audio Decoder and Output Interface Datapath

1) Compressed Data

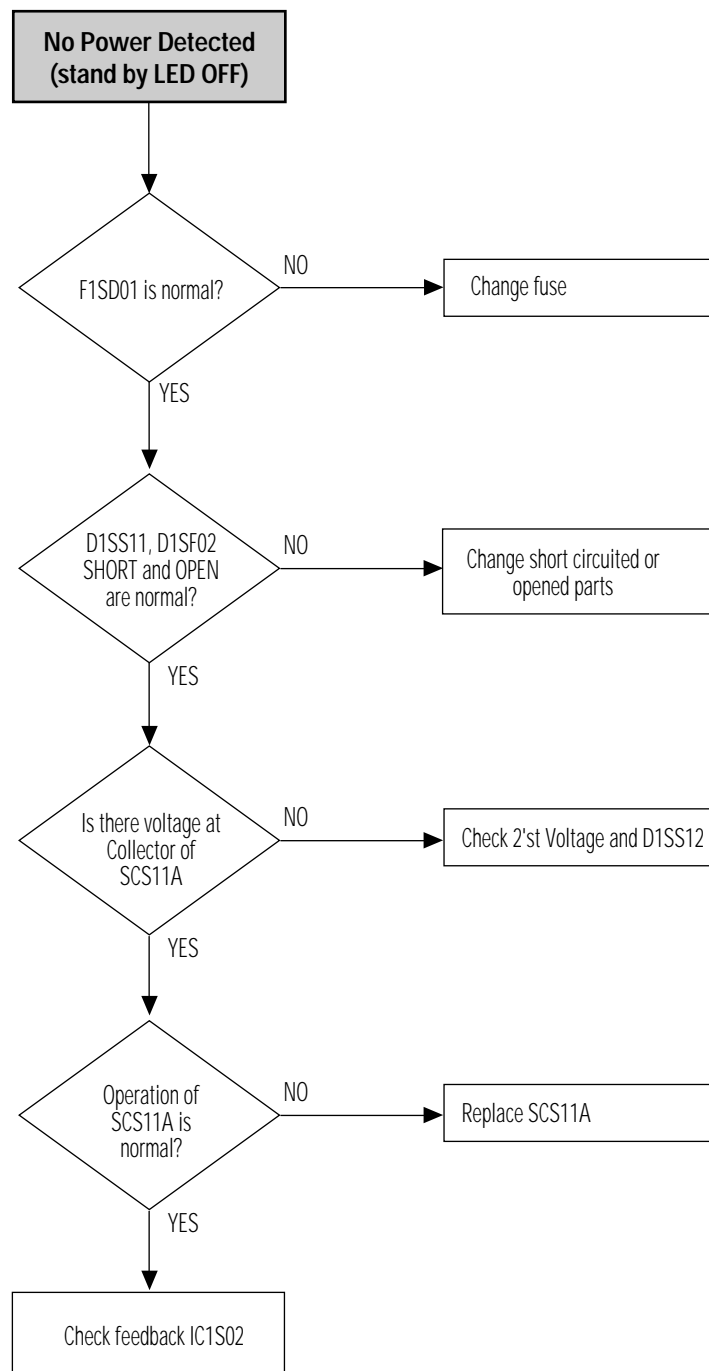
The audio data inputted to U1 (Vibratto[]) A/V decoder is divided into compressed data and uncompressed data. It is compressed data that is compressed with multi-channel audio data such as Dolby digital, MPEG, DTS, WMA, etc. The compressed data inputted to (Vibratto[]) is converted into the uncompressed data of 2, 4, and 6 channels through U1 built-in audio decoder and is outputted to Data 0 through digital audio interface. The compressed data is transmitted to external AC-3 amplifier or MPEG/DTS amplifier as IEC-958/1937 transmission data format compressed by U1 built-in IEC-958 output process.

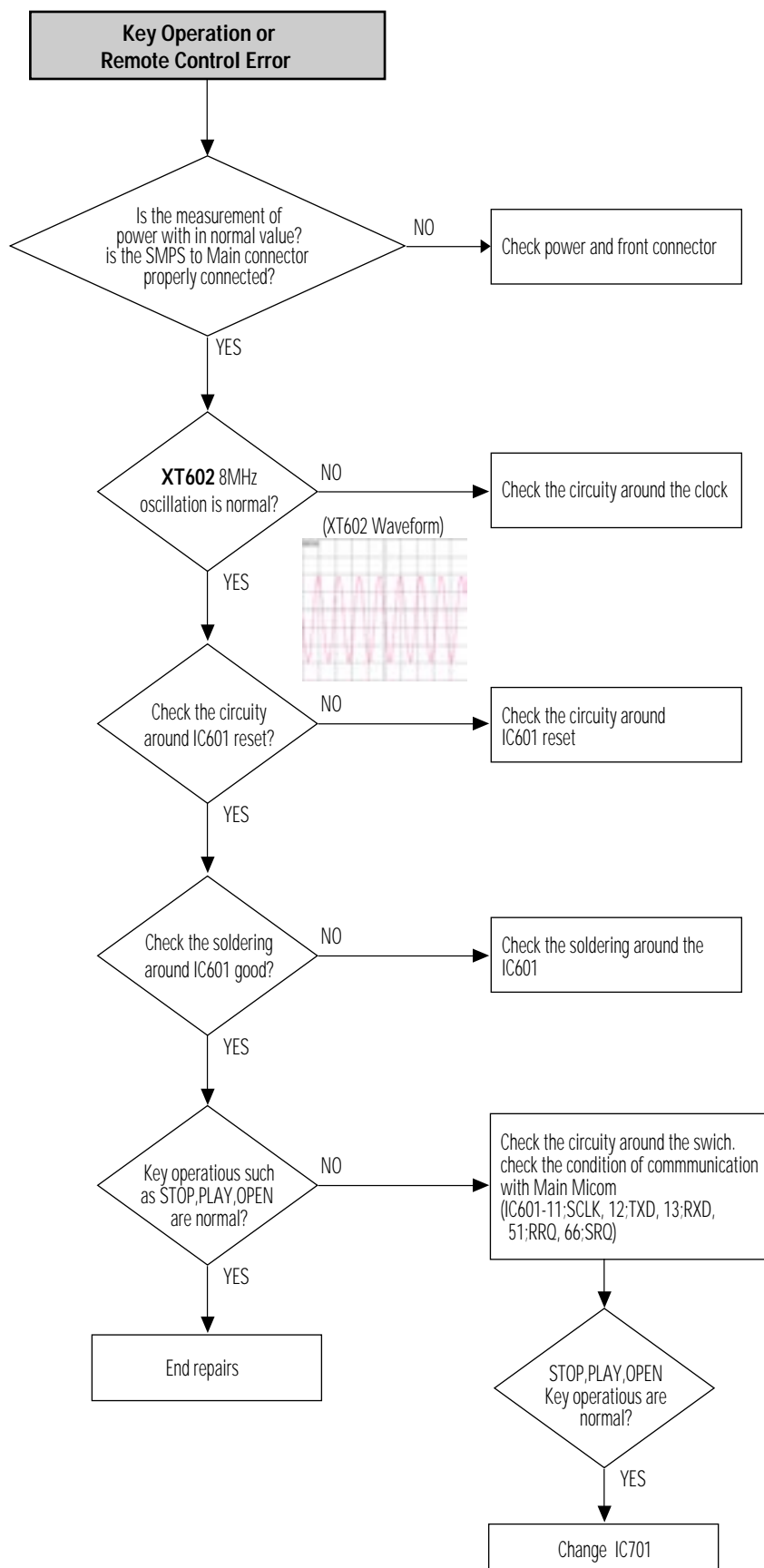
2) Uncompressed Data

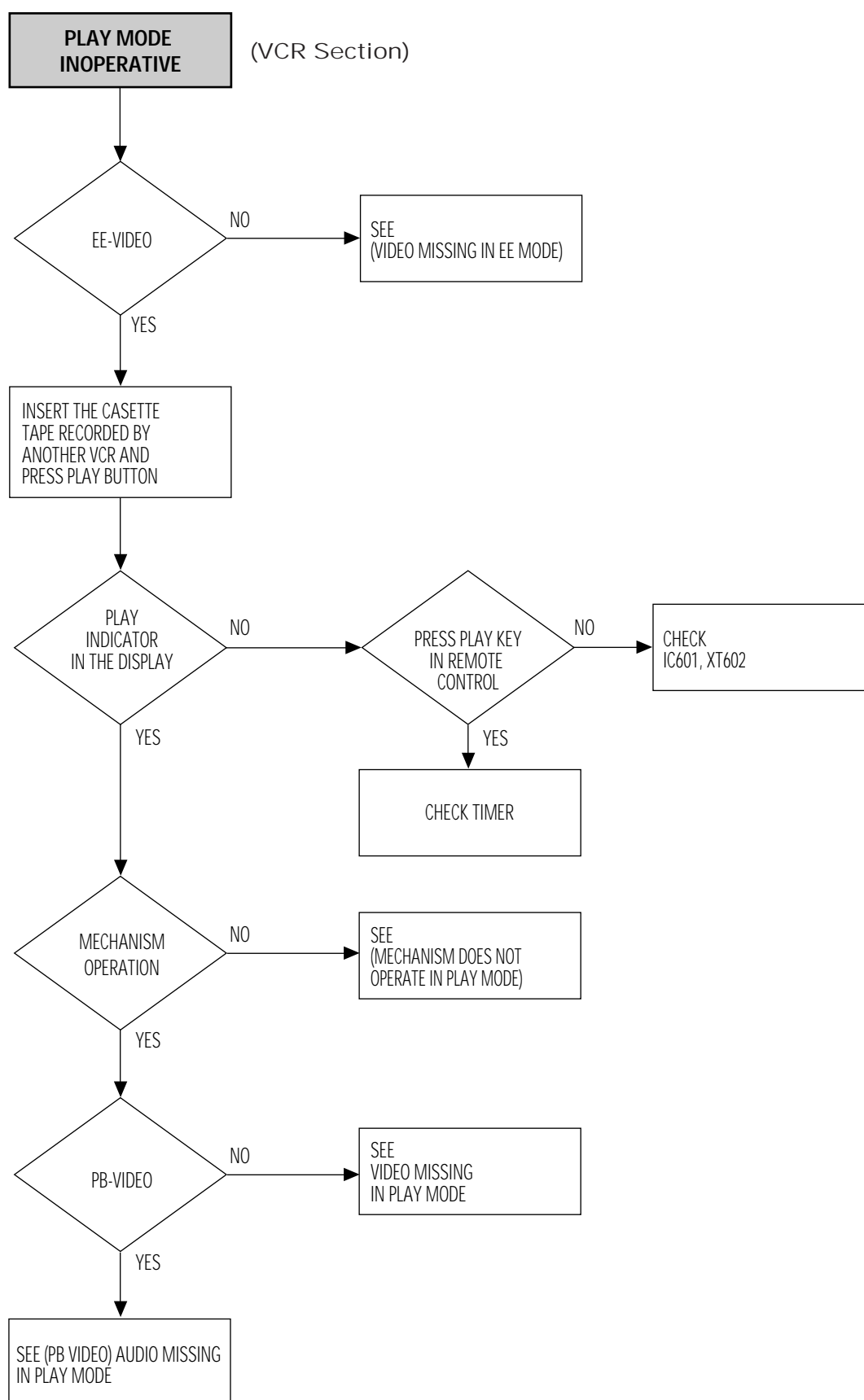
The uncompressed data is that data isn't compressed, so it is called CD-DA, LPCM data.

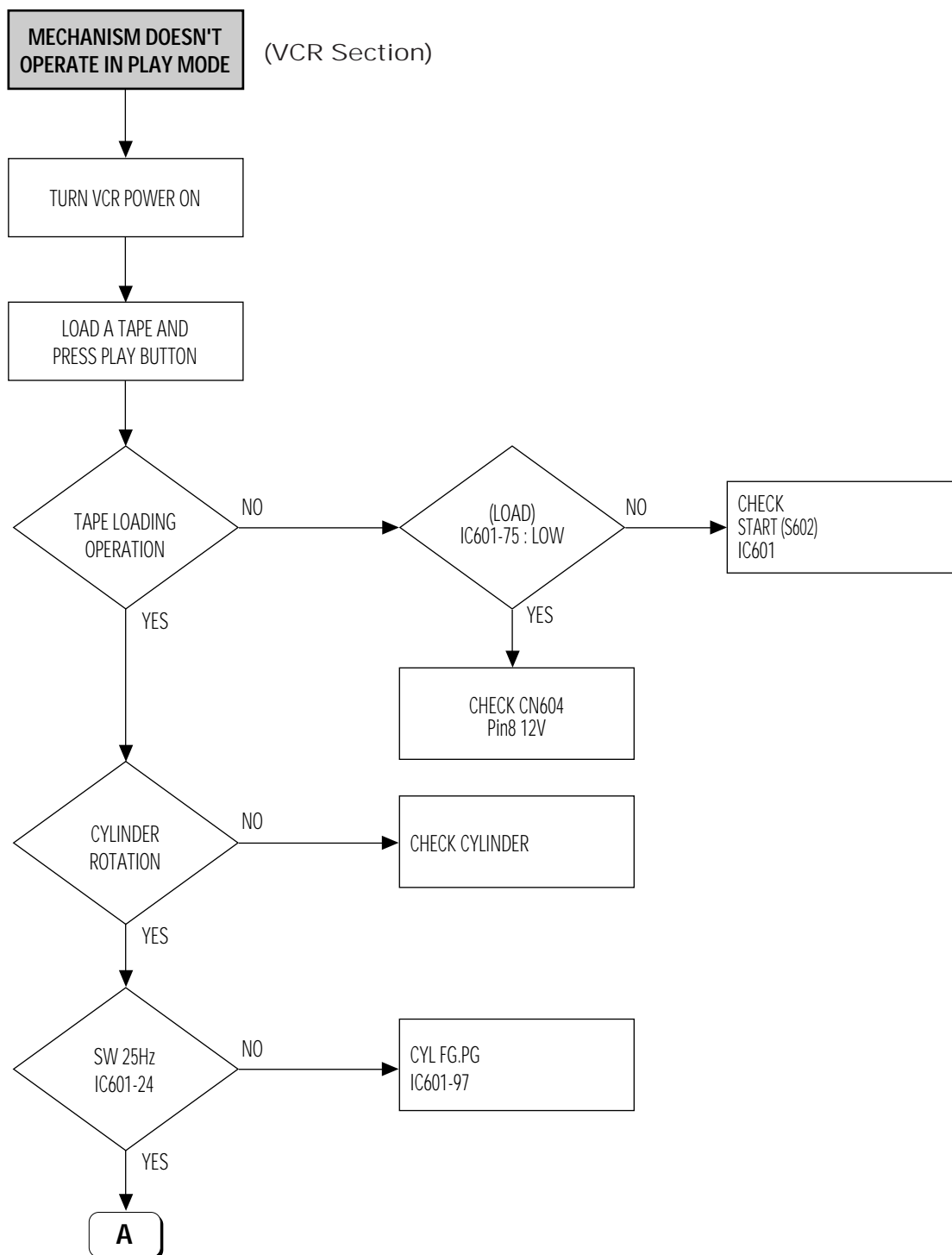
The 2 channels data is converted through audio decoder 2-channel data and Data 0 and are outputted in digital audio interface. Via IEC-958 output process, they are transmitted to digital amplifier or AC-3/MPEG/DTS amplifier built in the external digital input source with IEC-958/1937 transmission format.

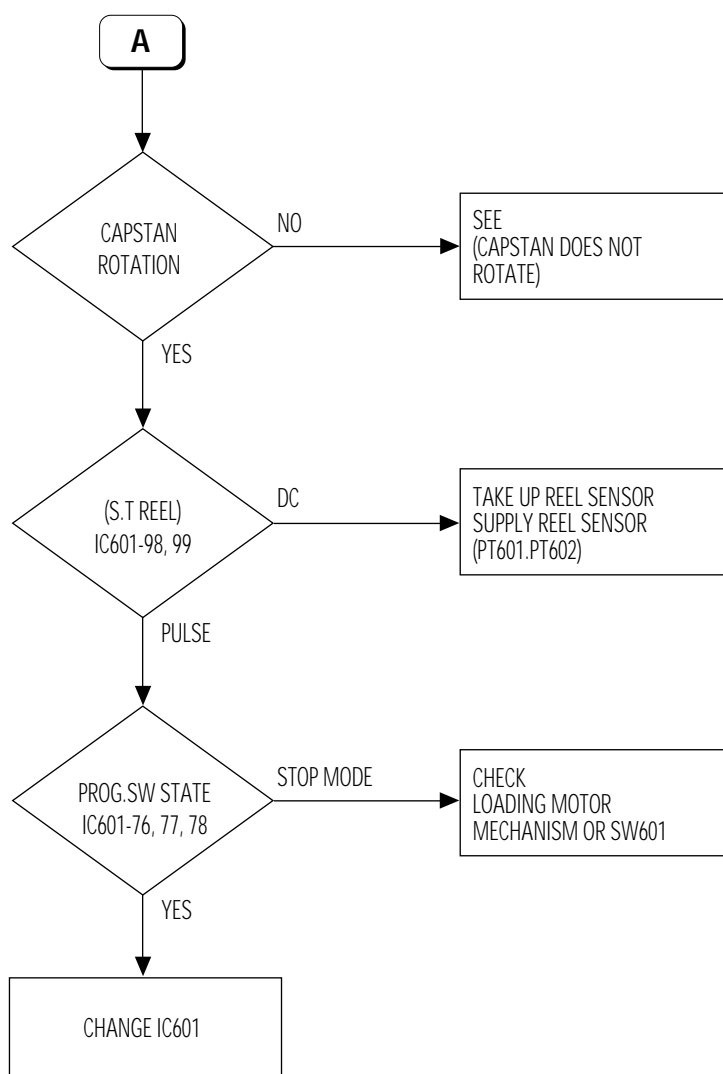
5. Troubleshooting

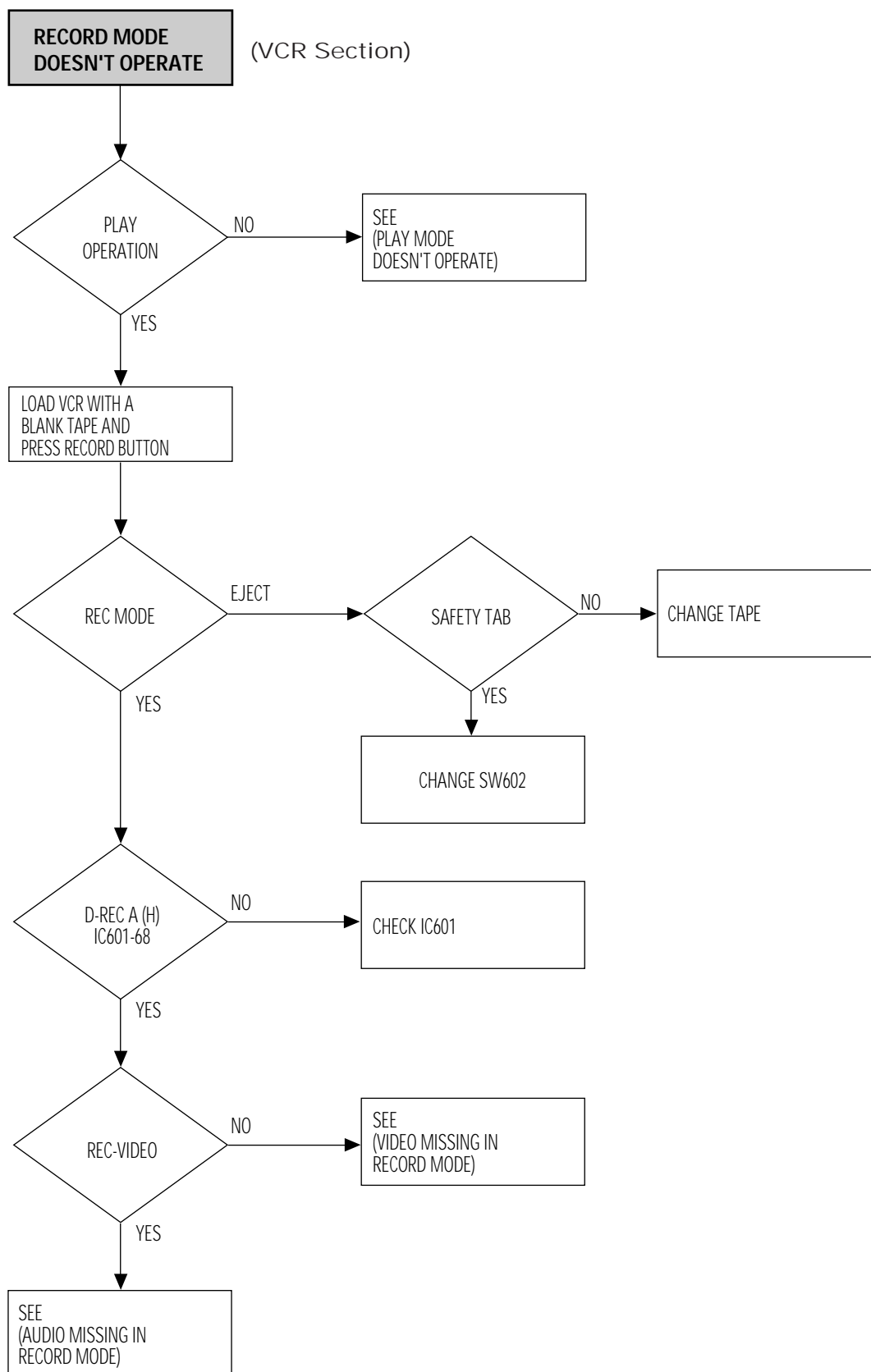


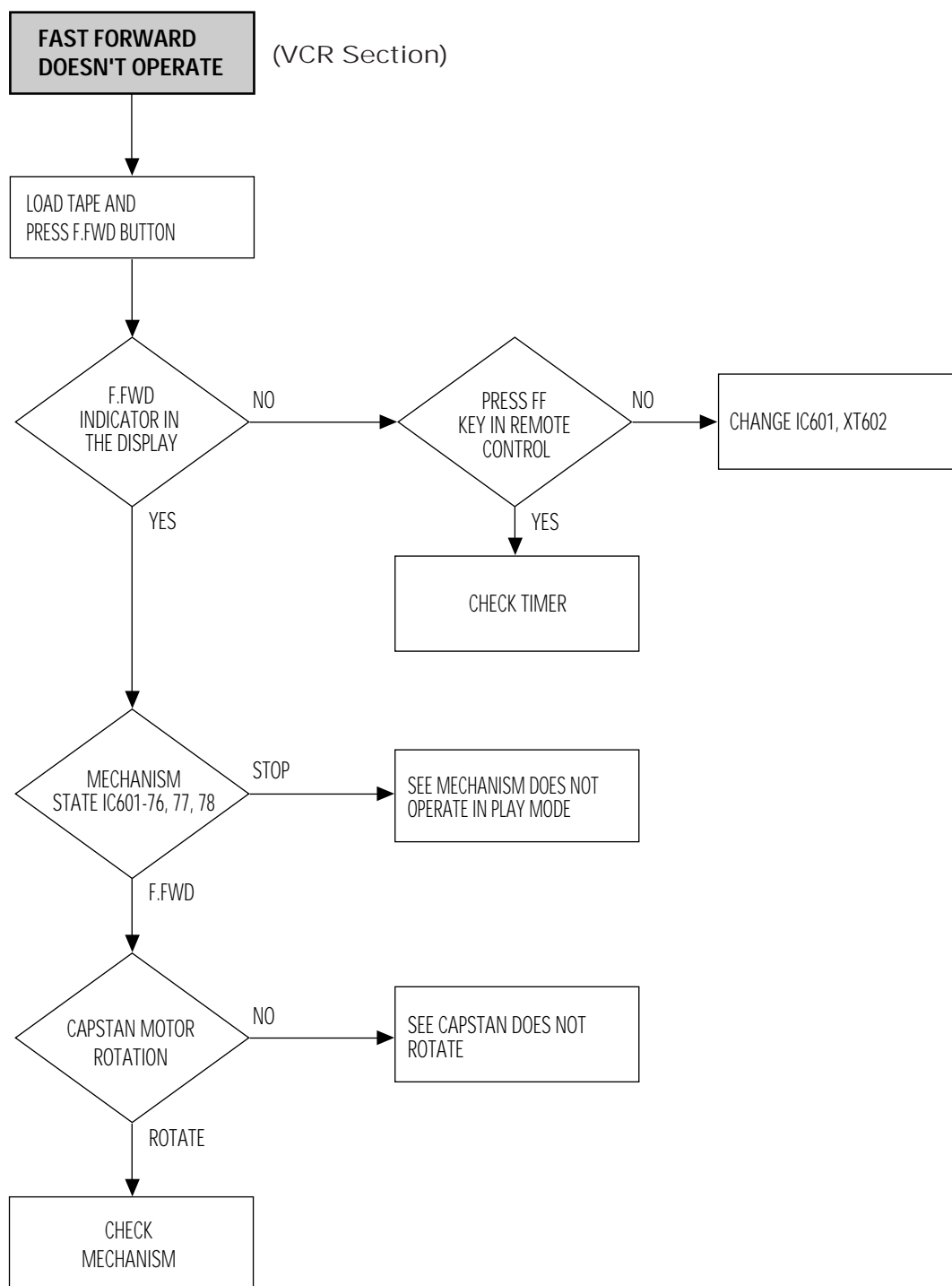


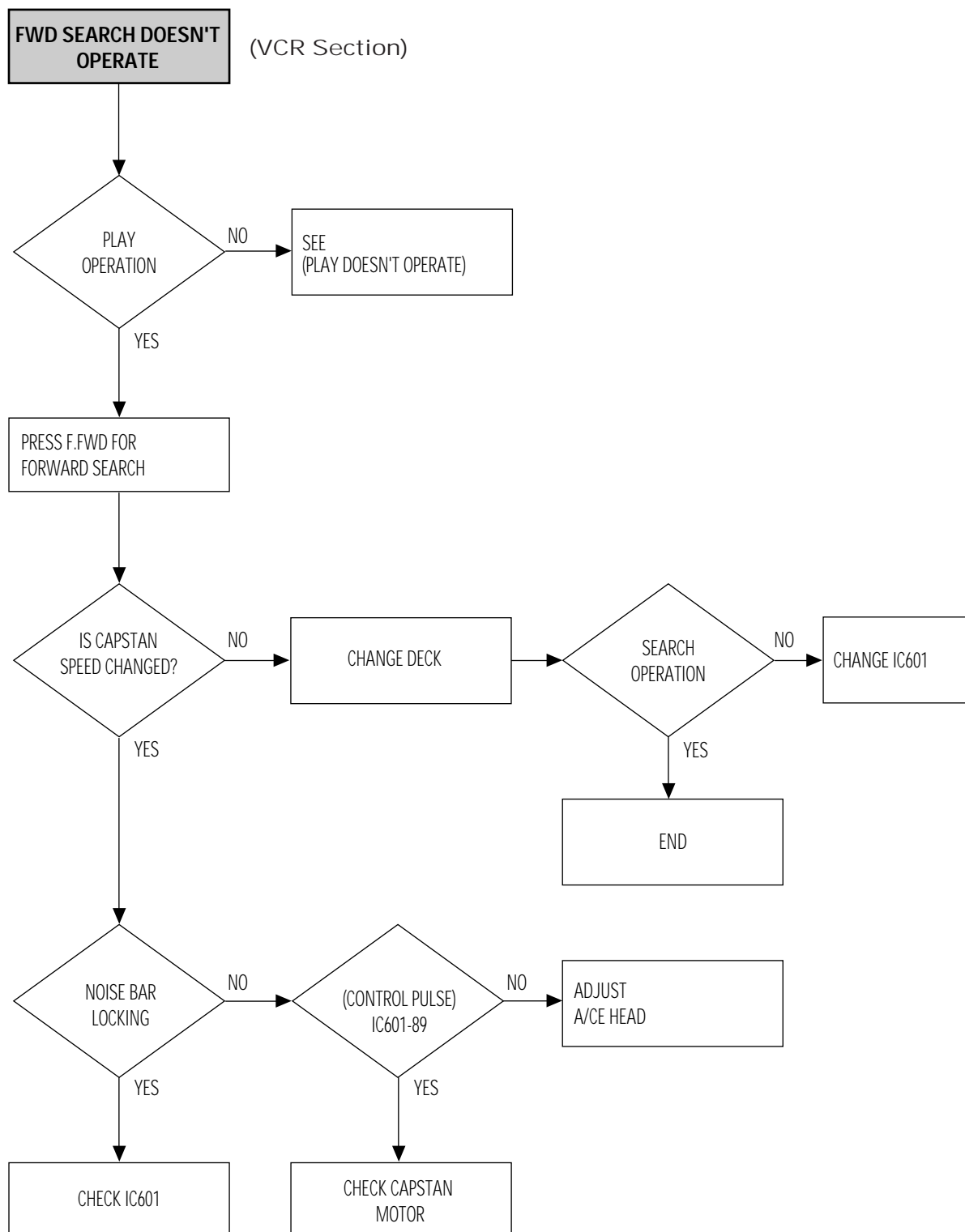


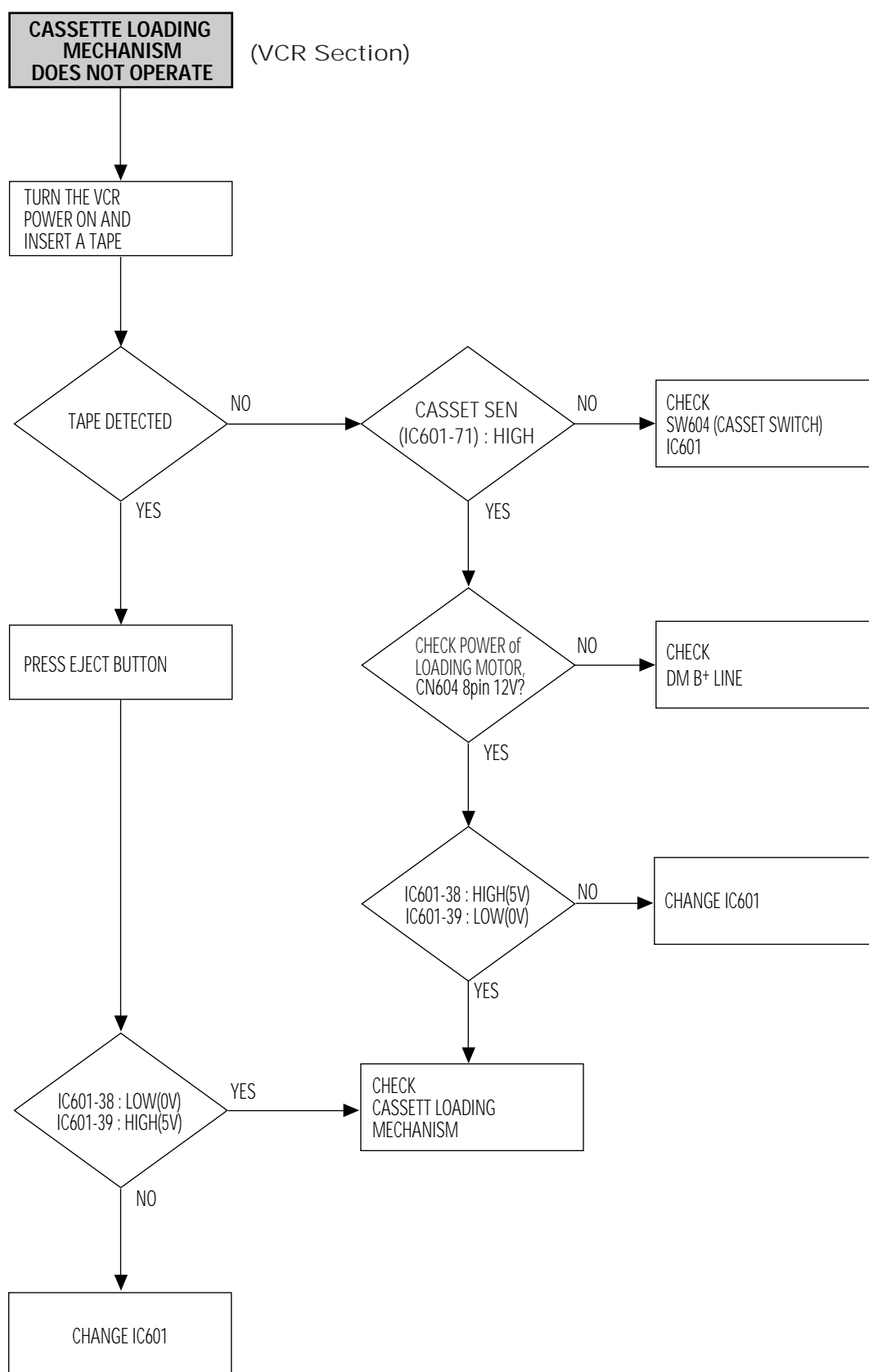


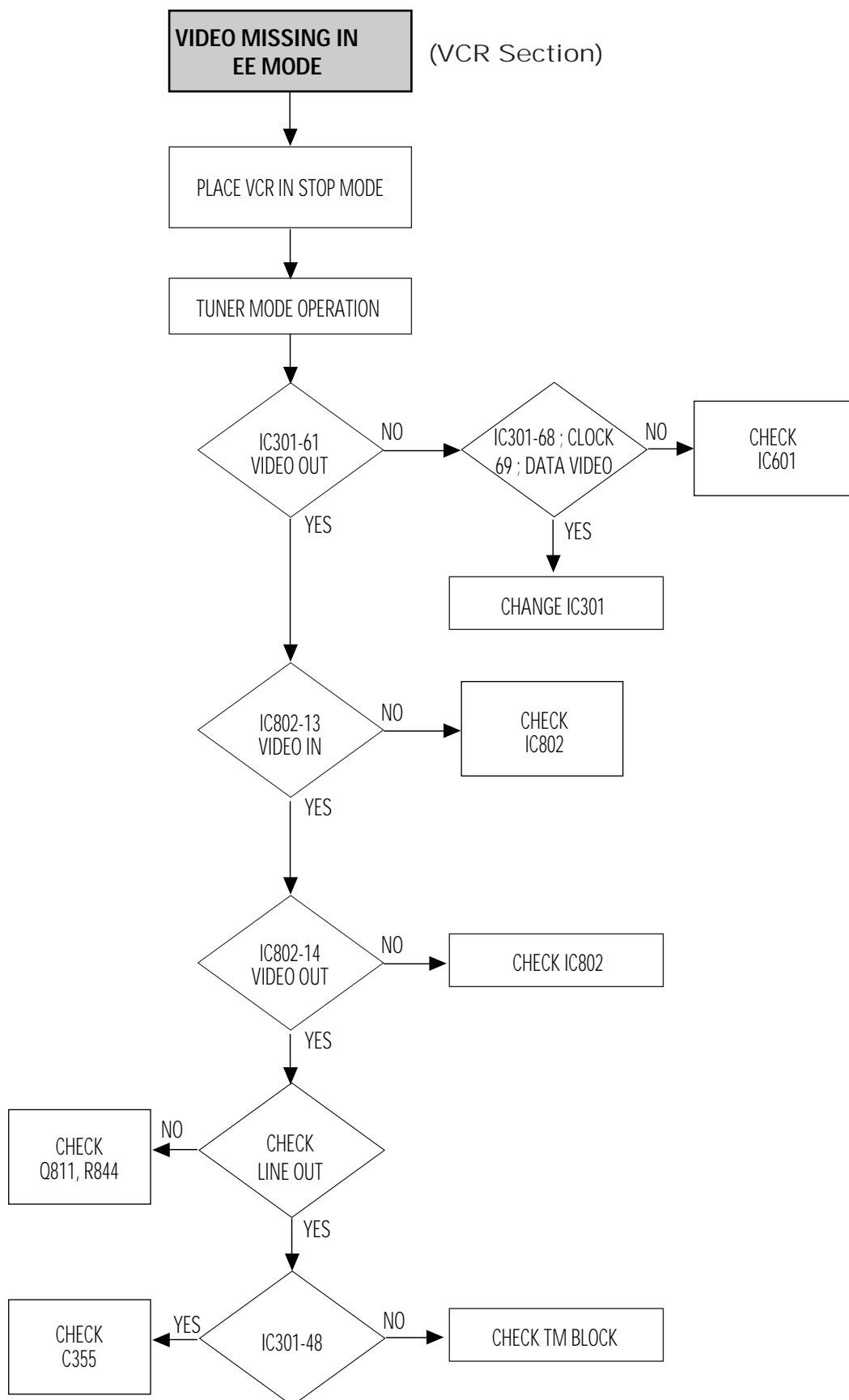


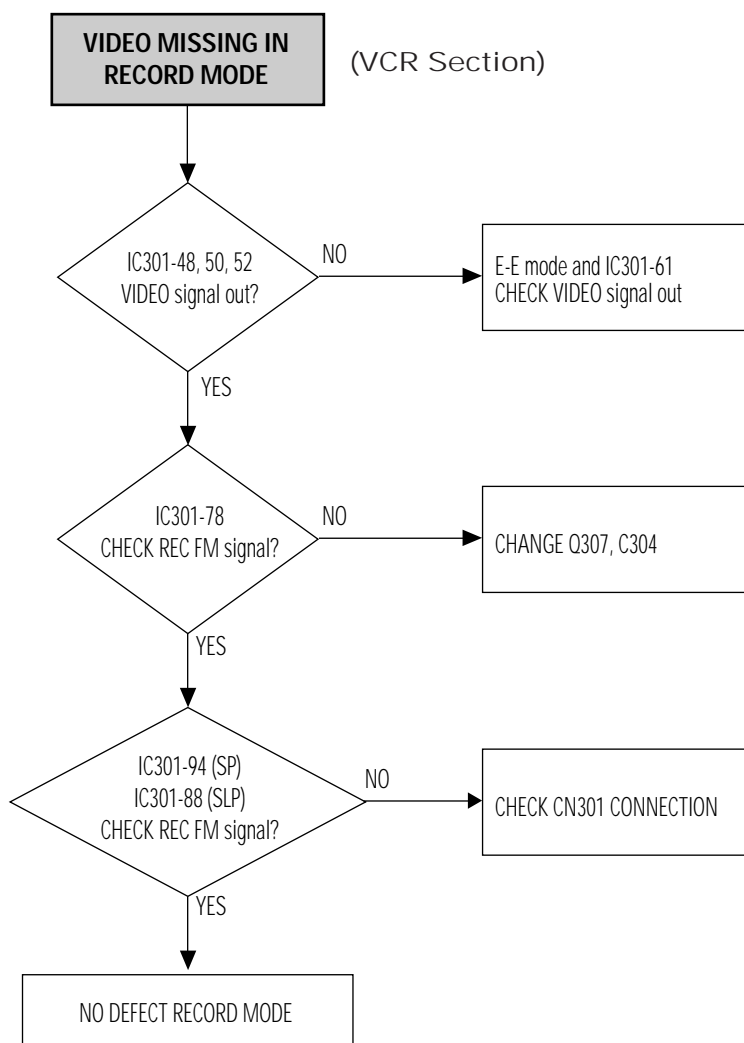


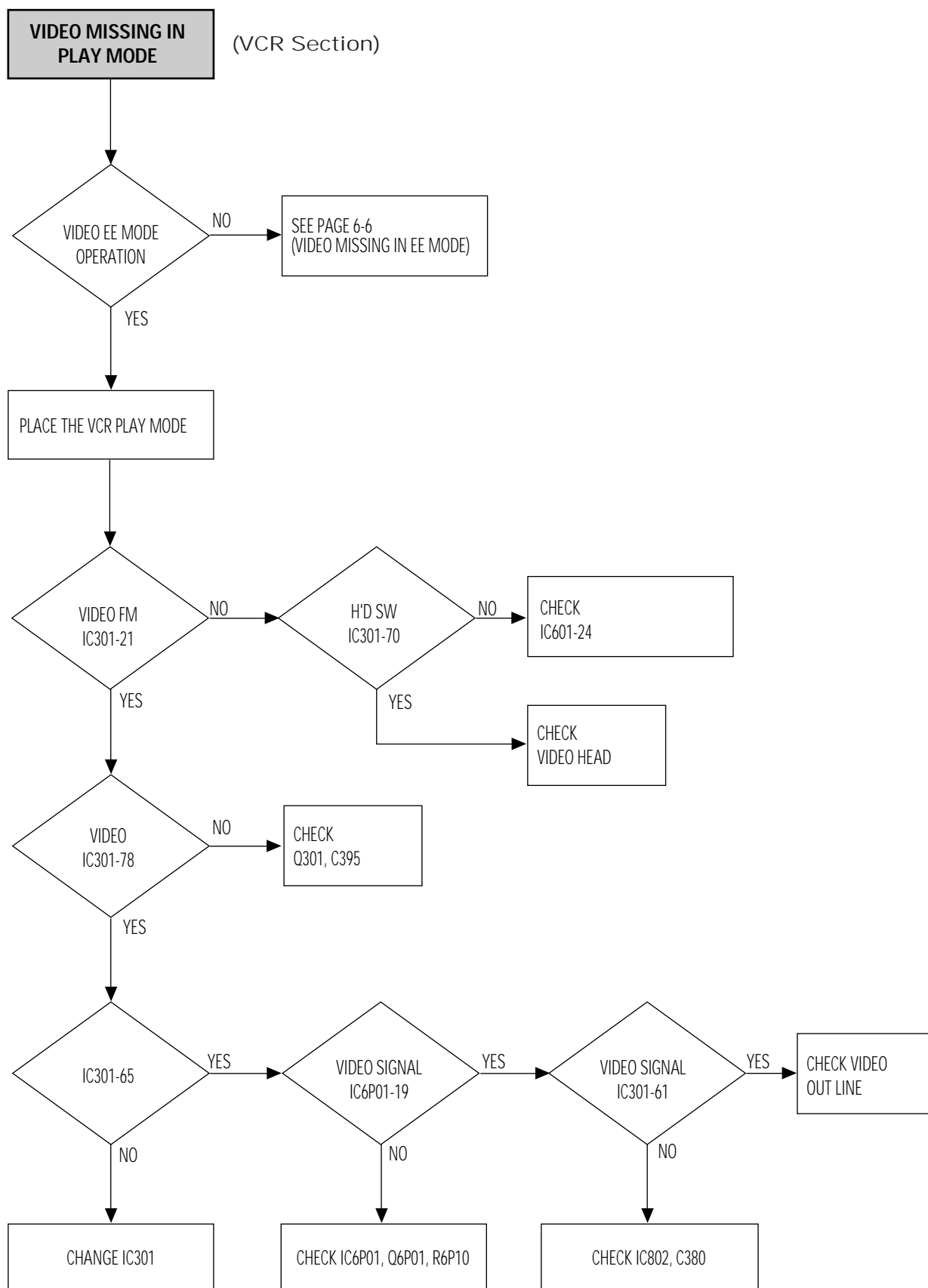


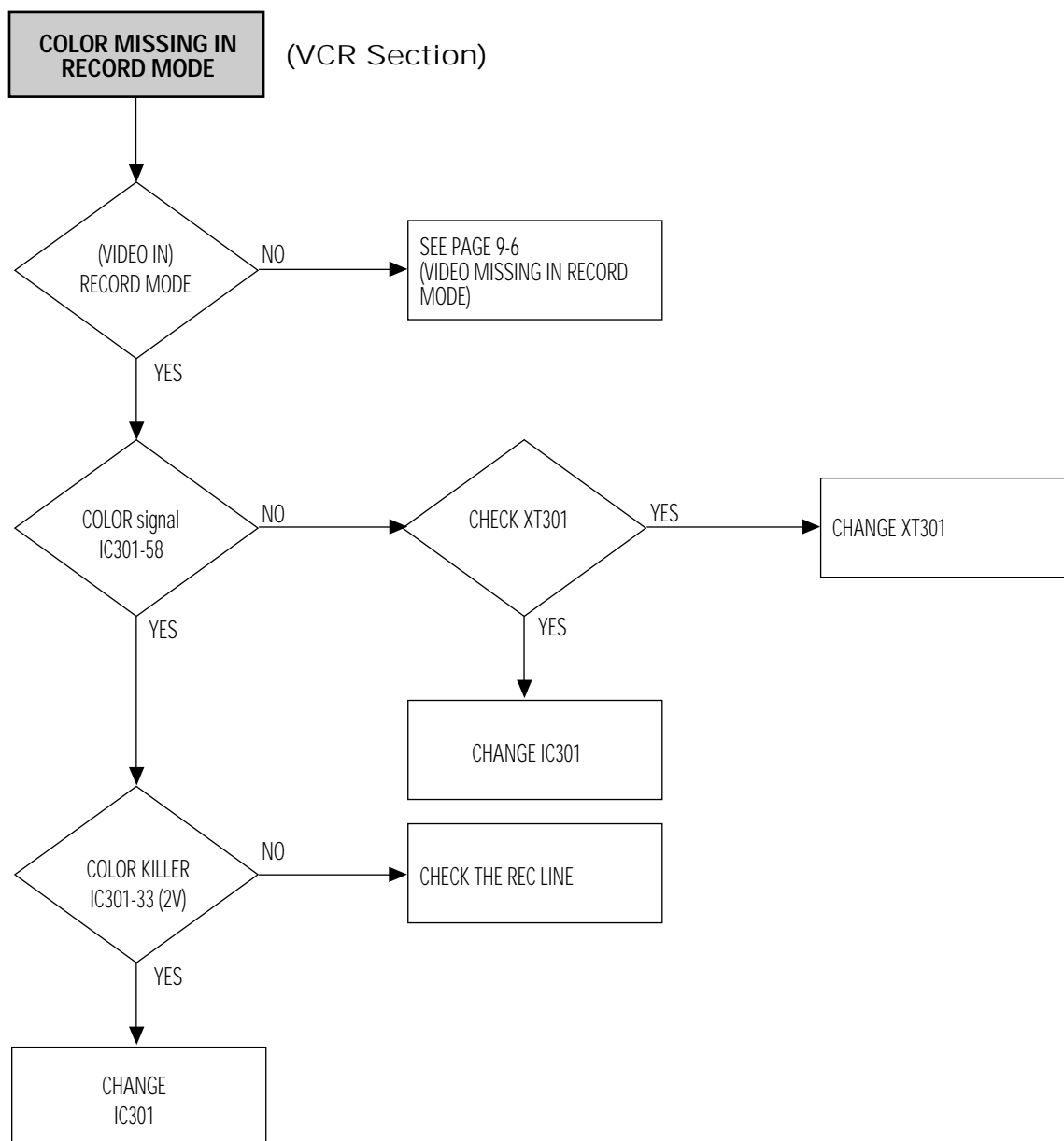


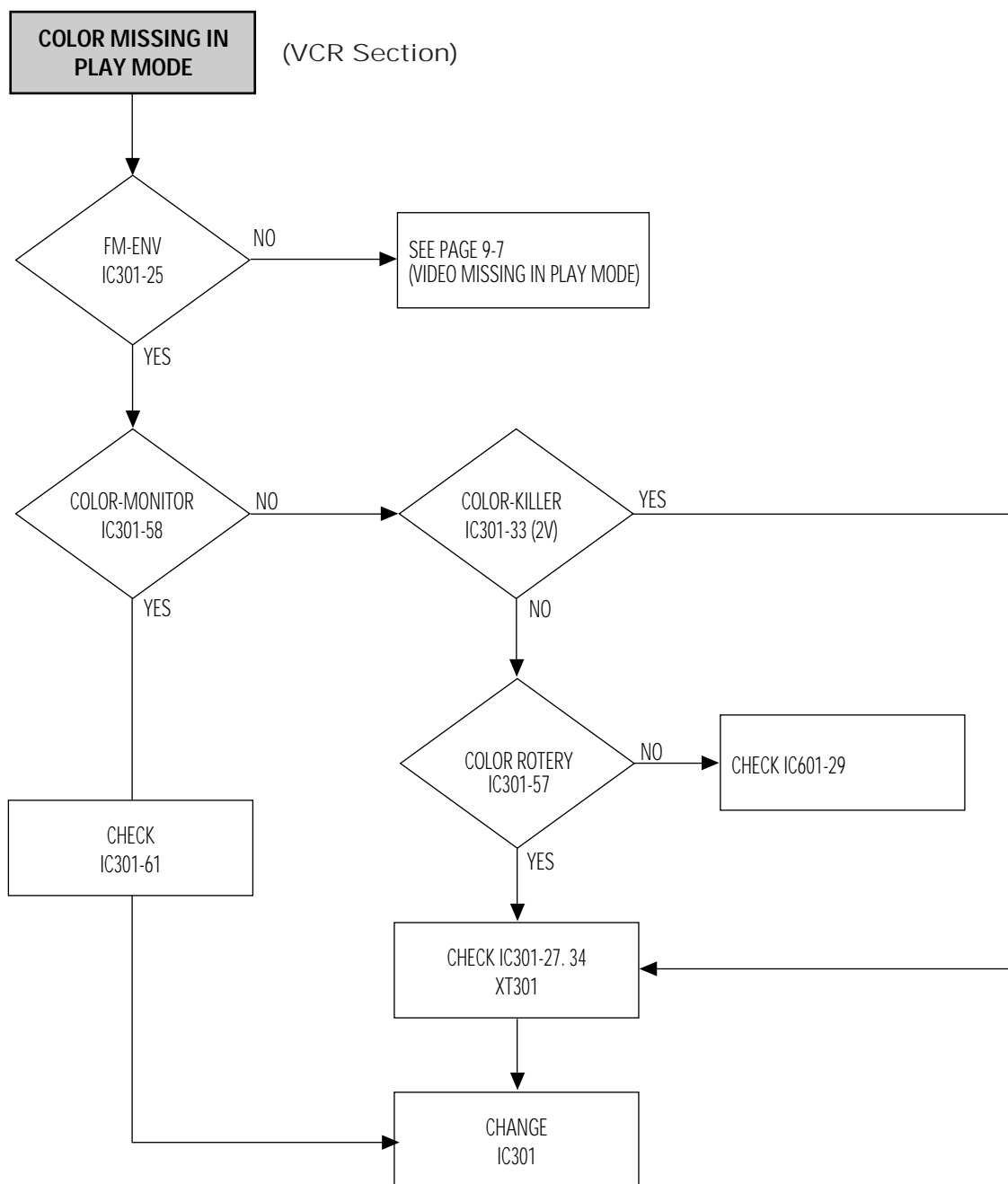


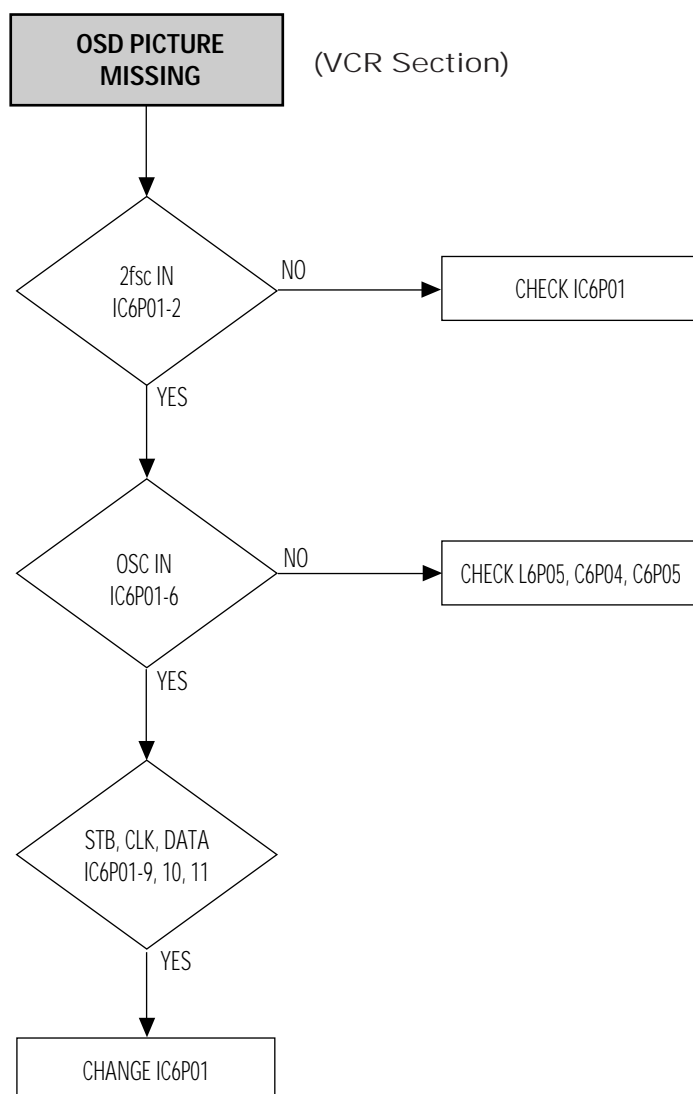


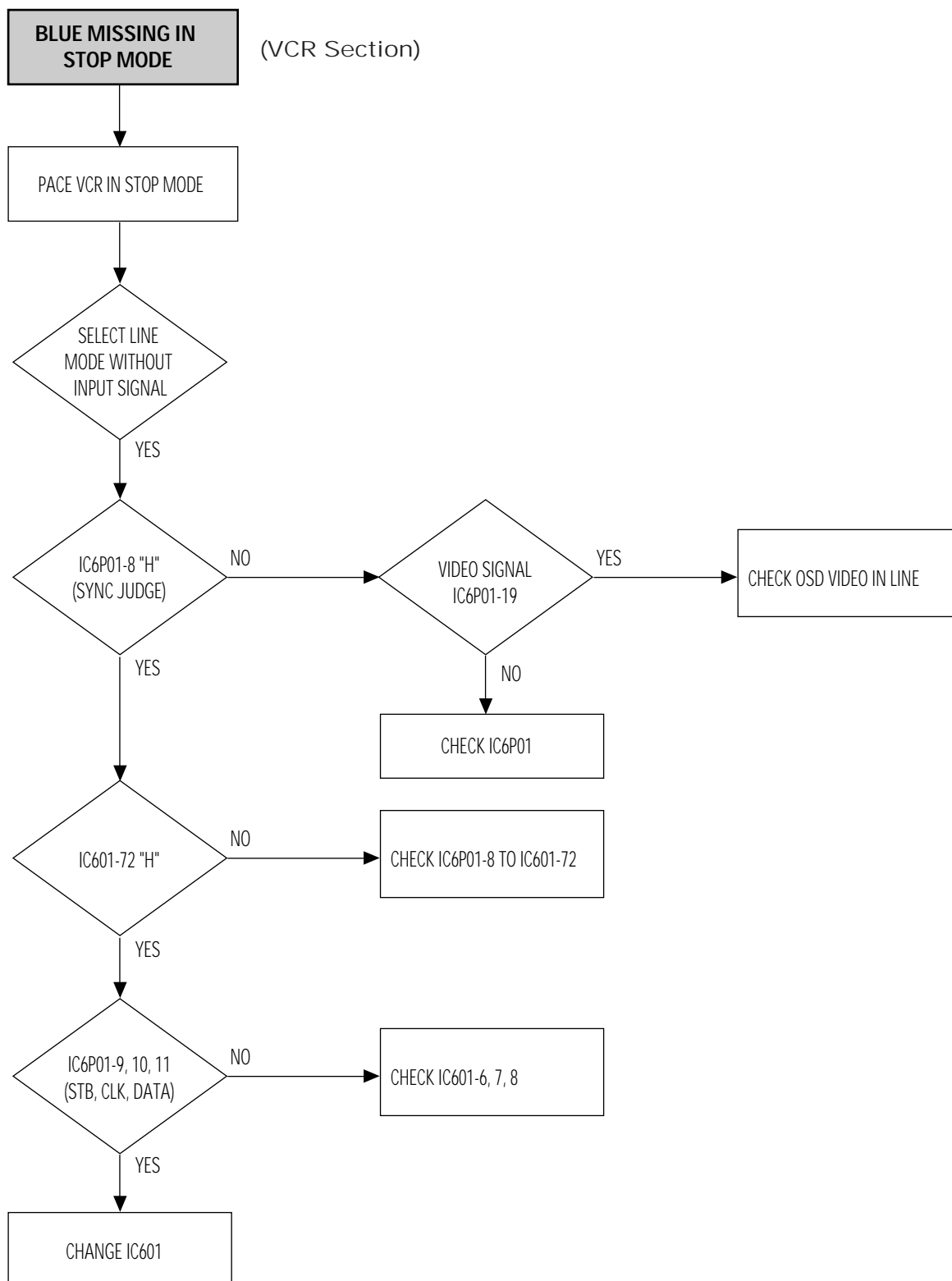


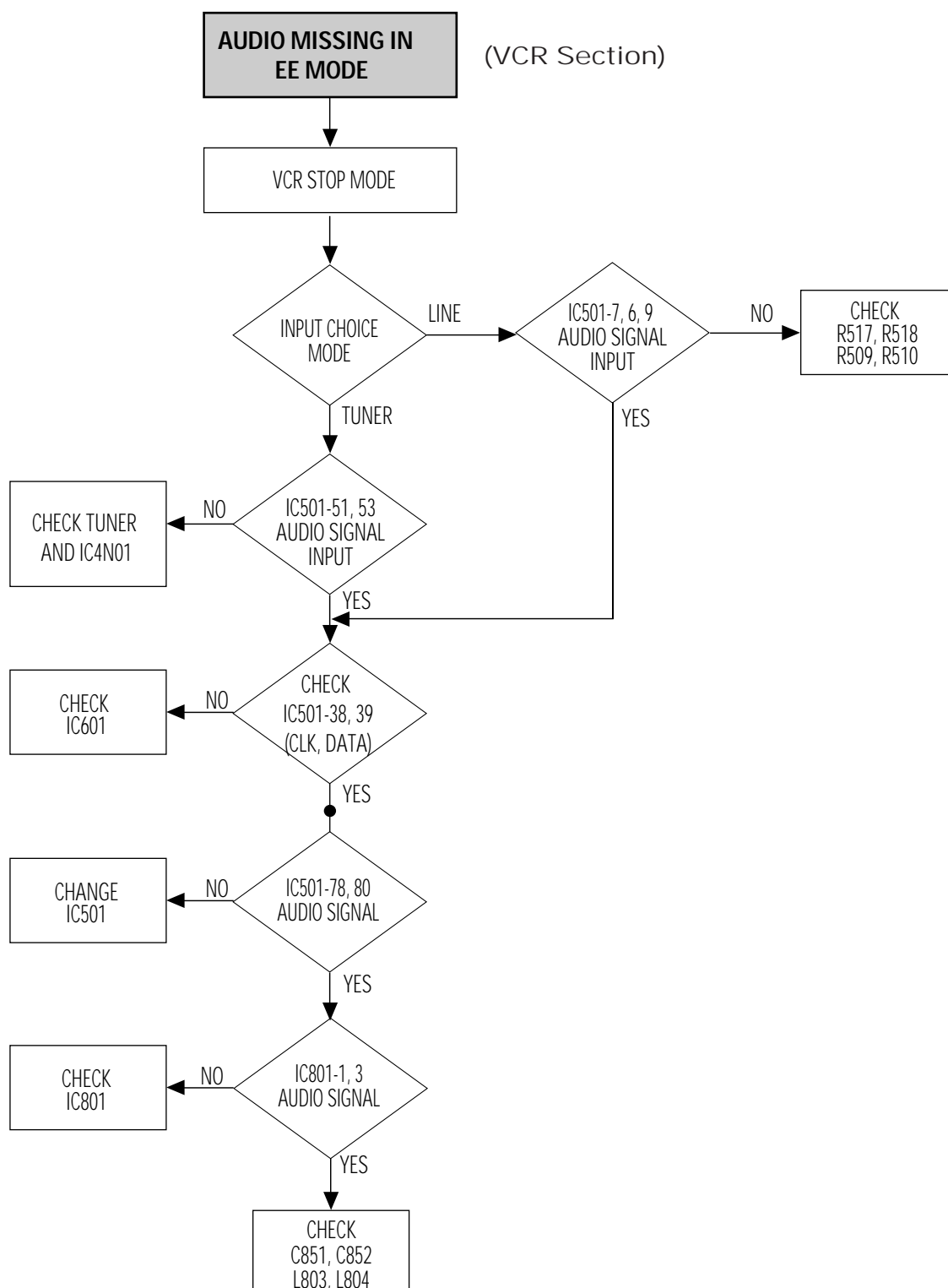


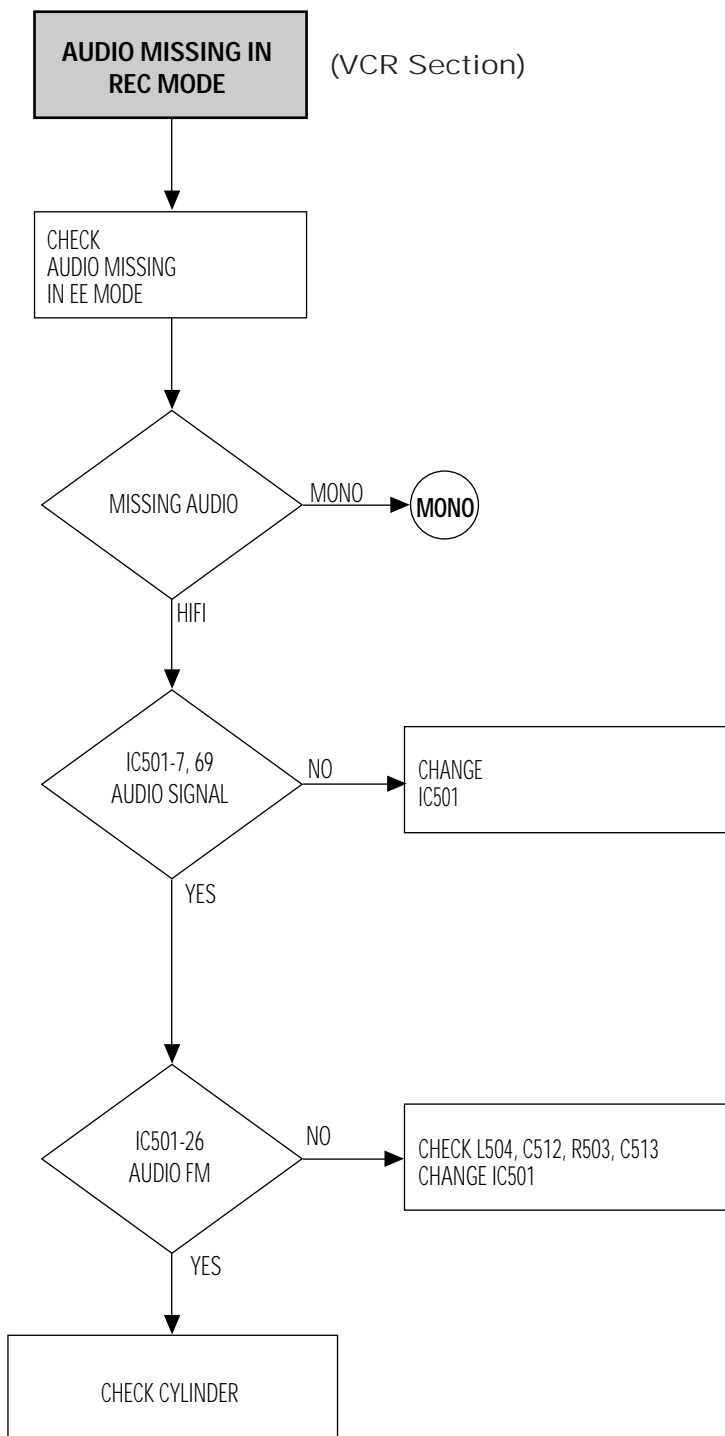


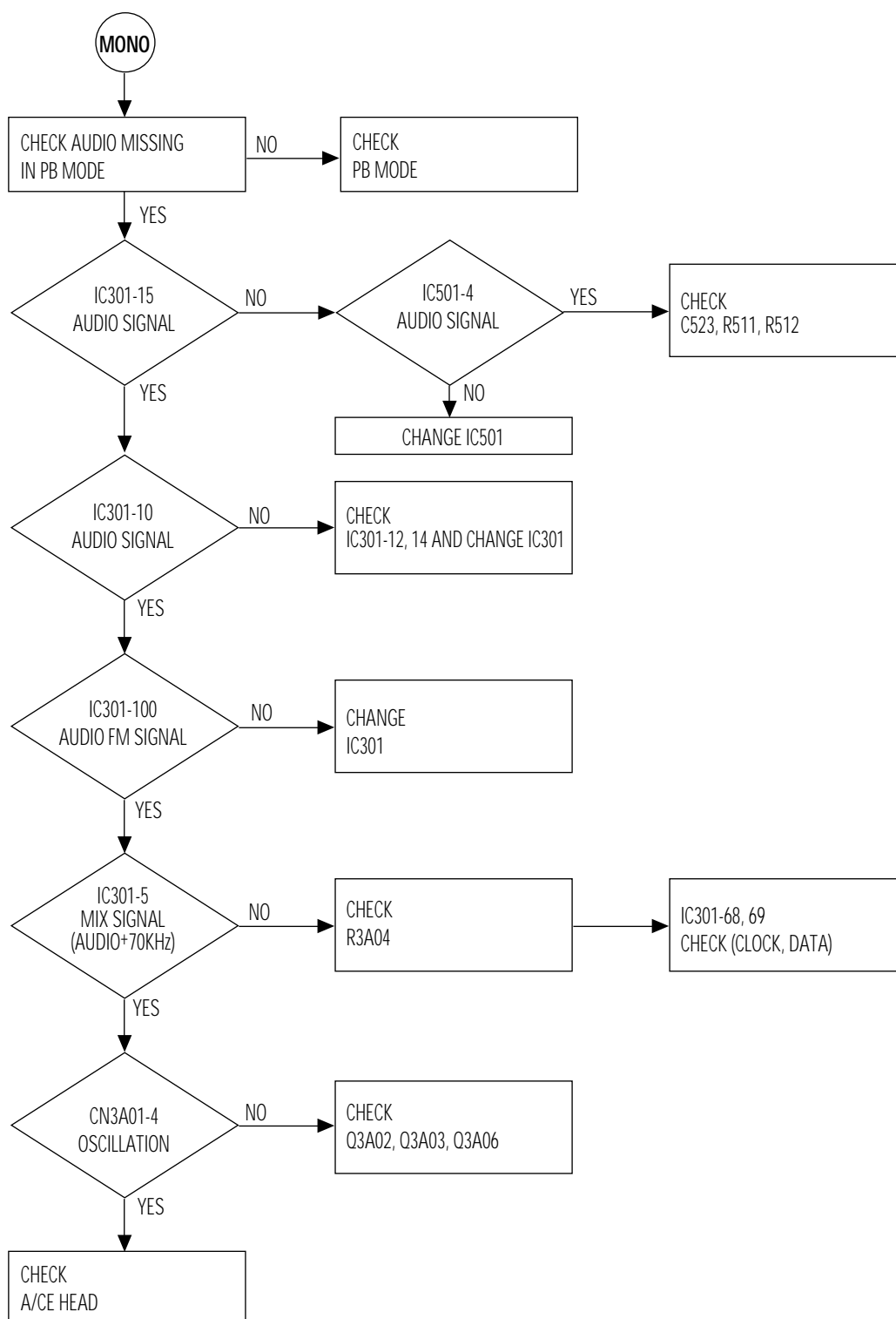


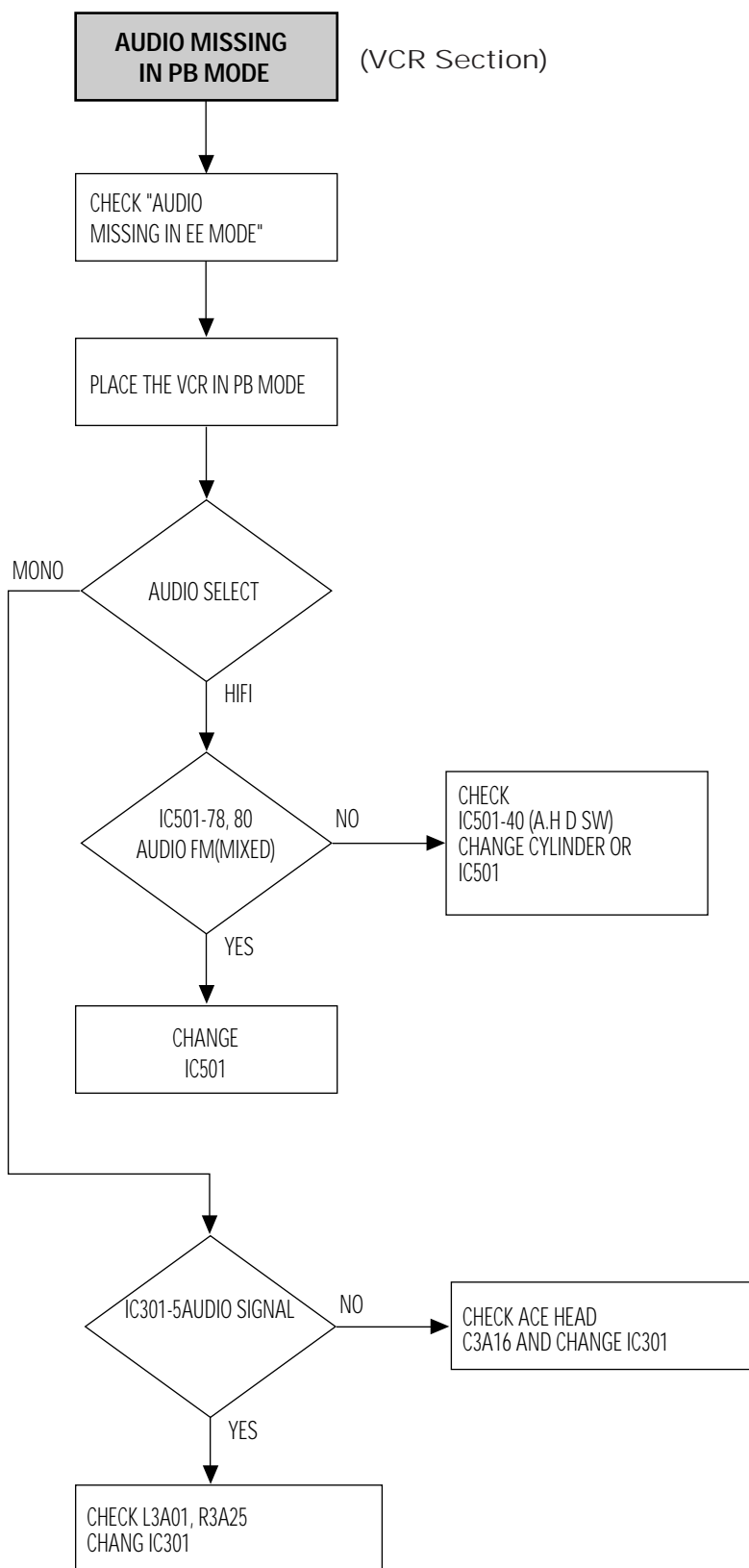


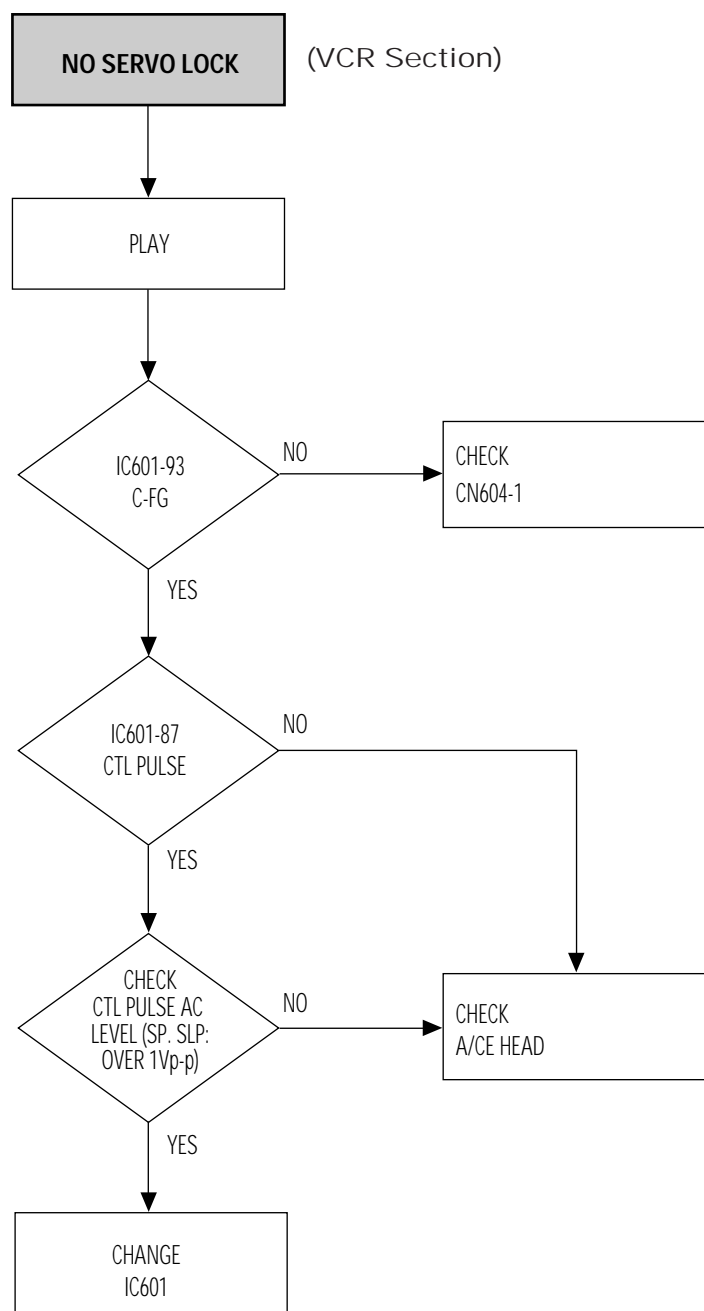


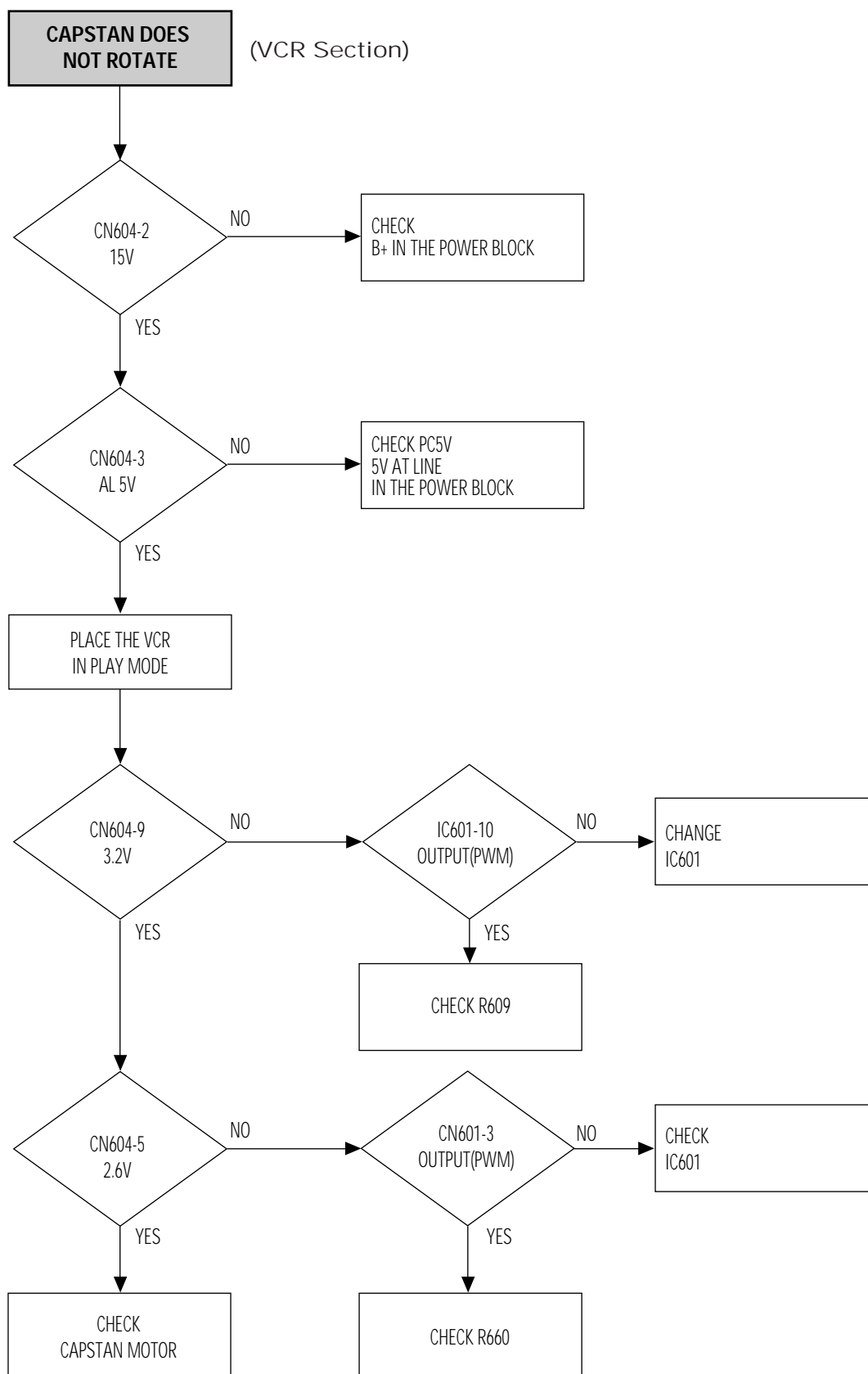


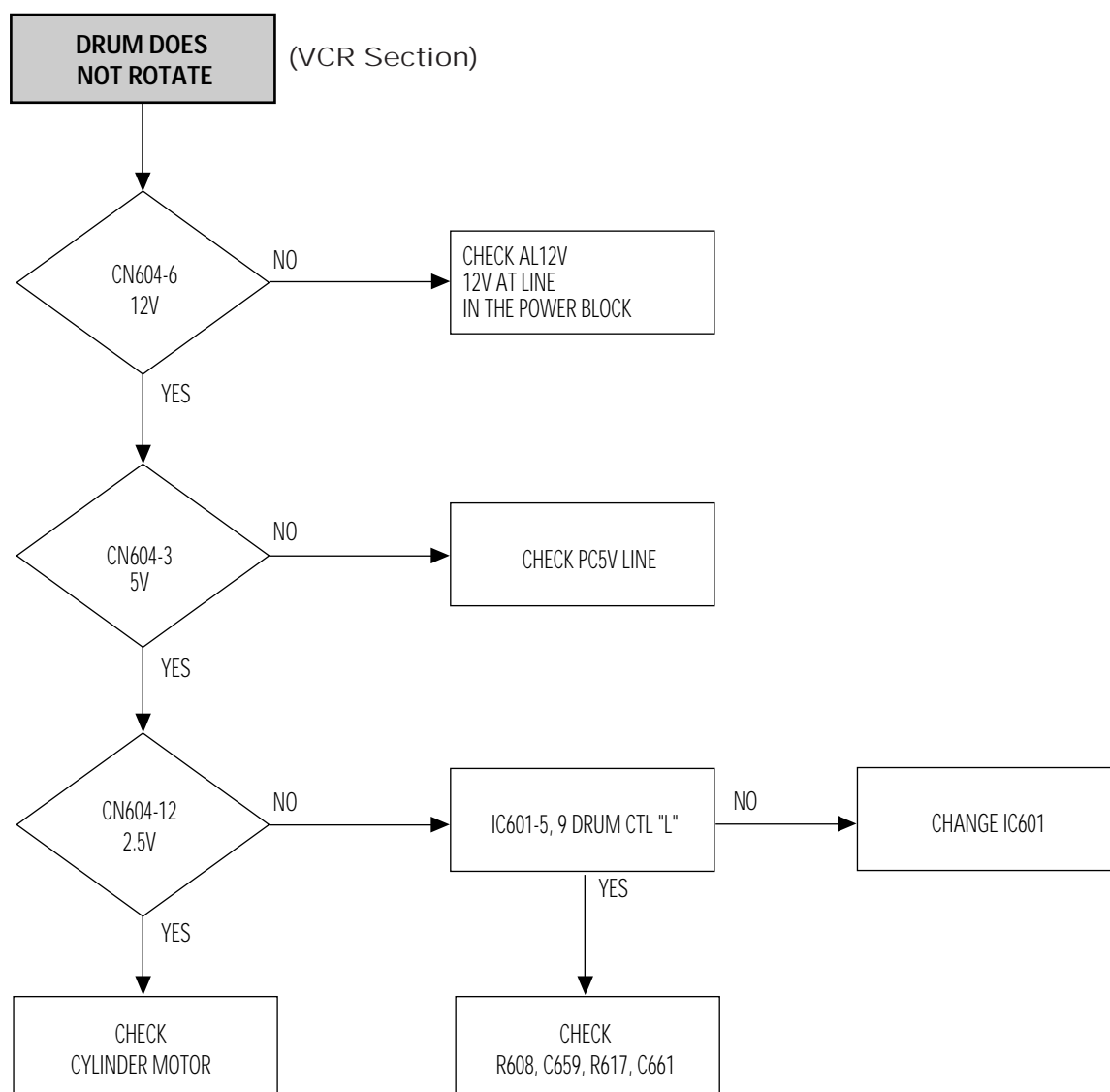


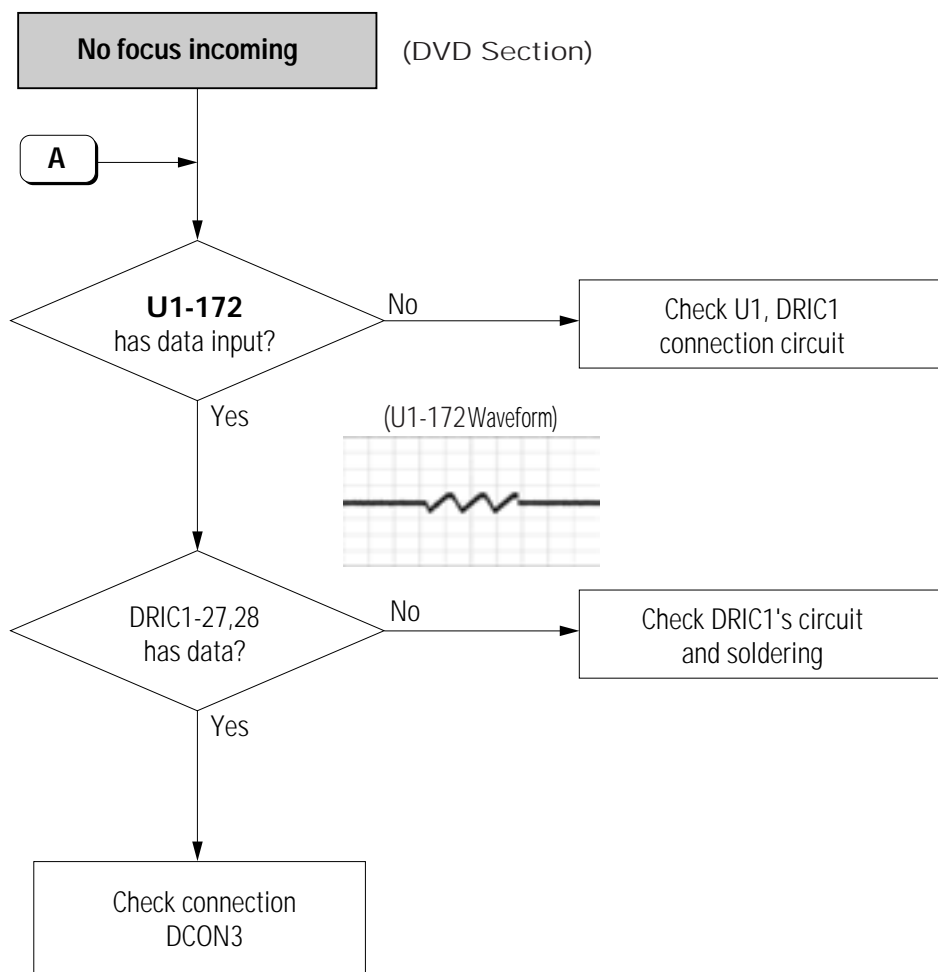


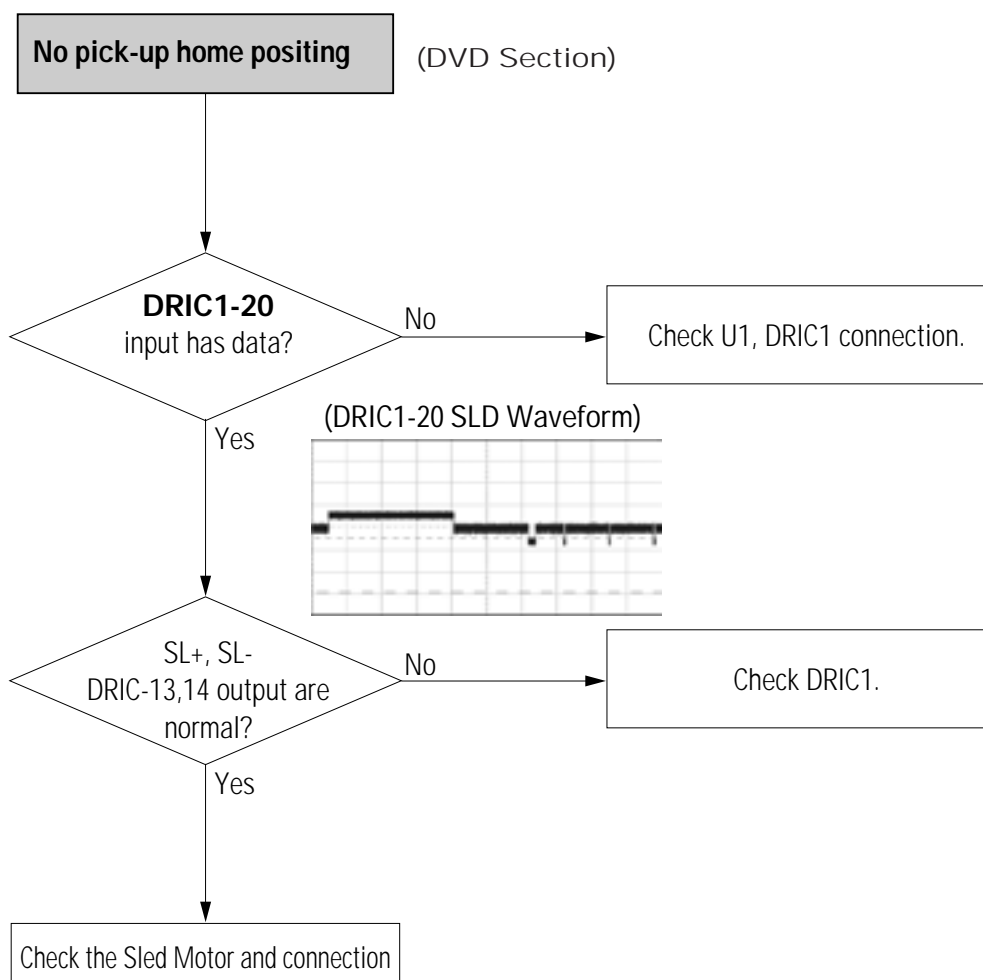


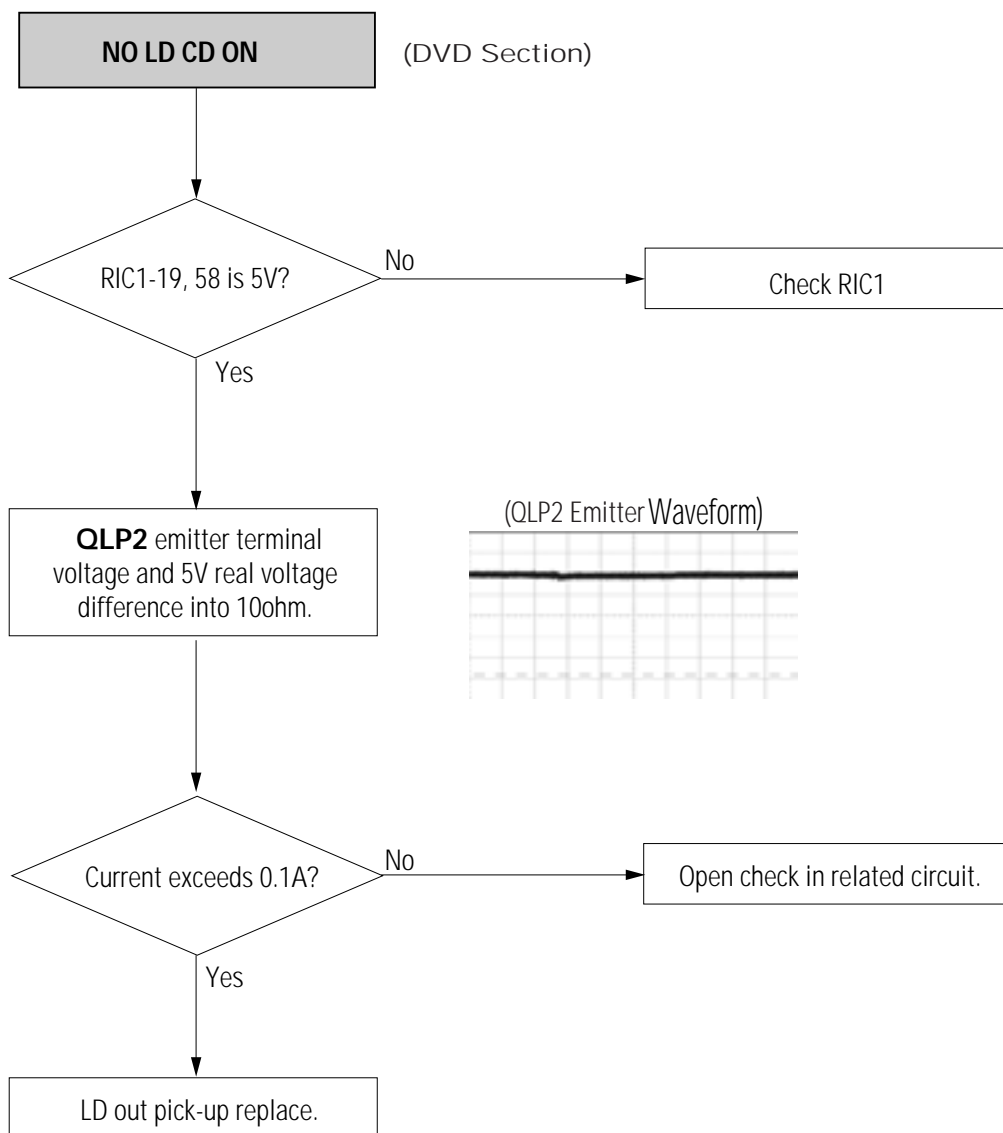


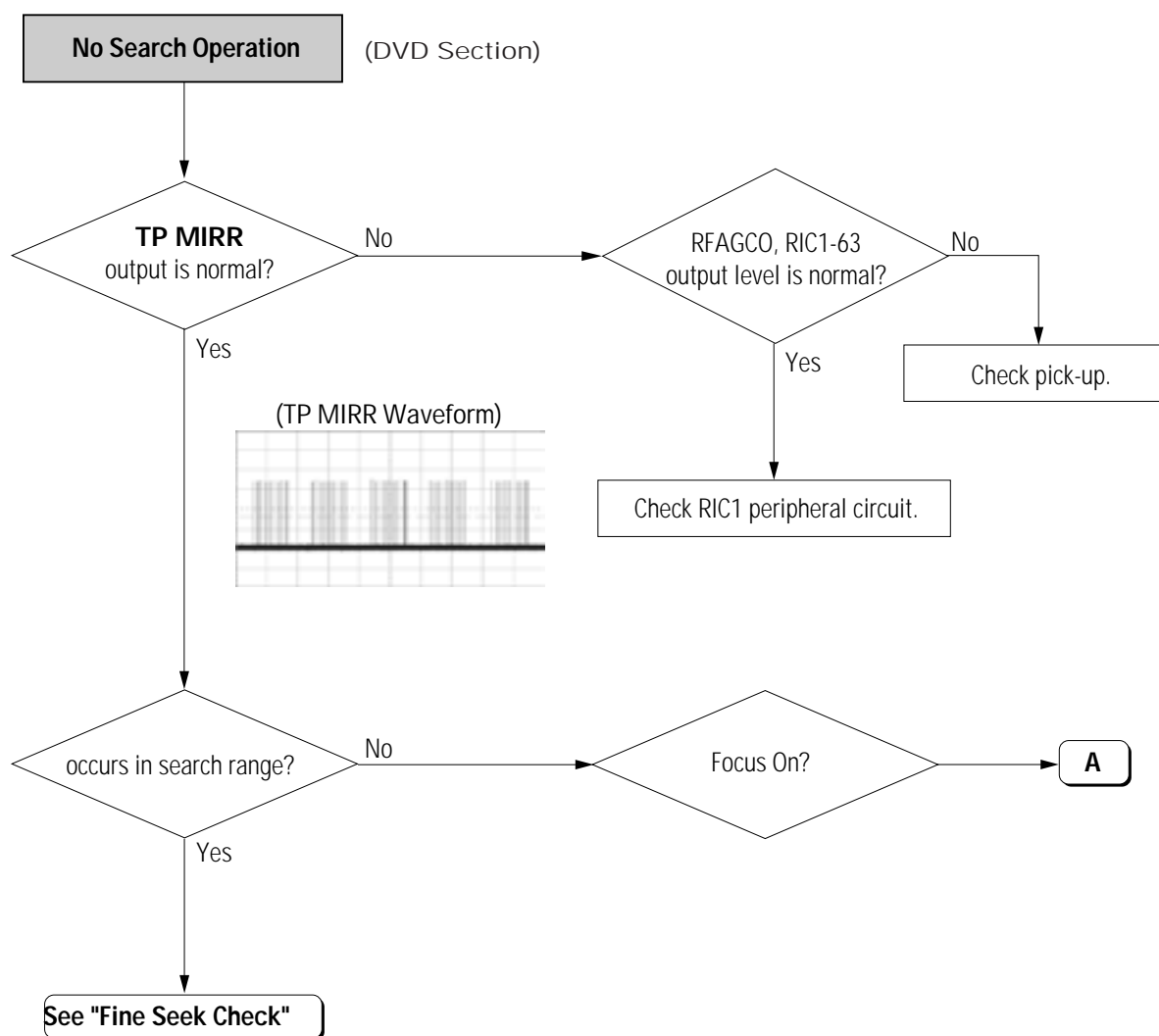


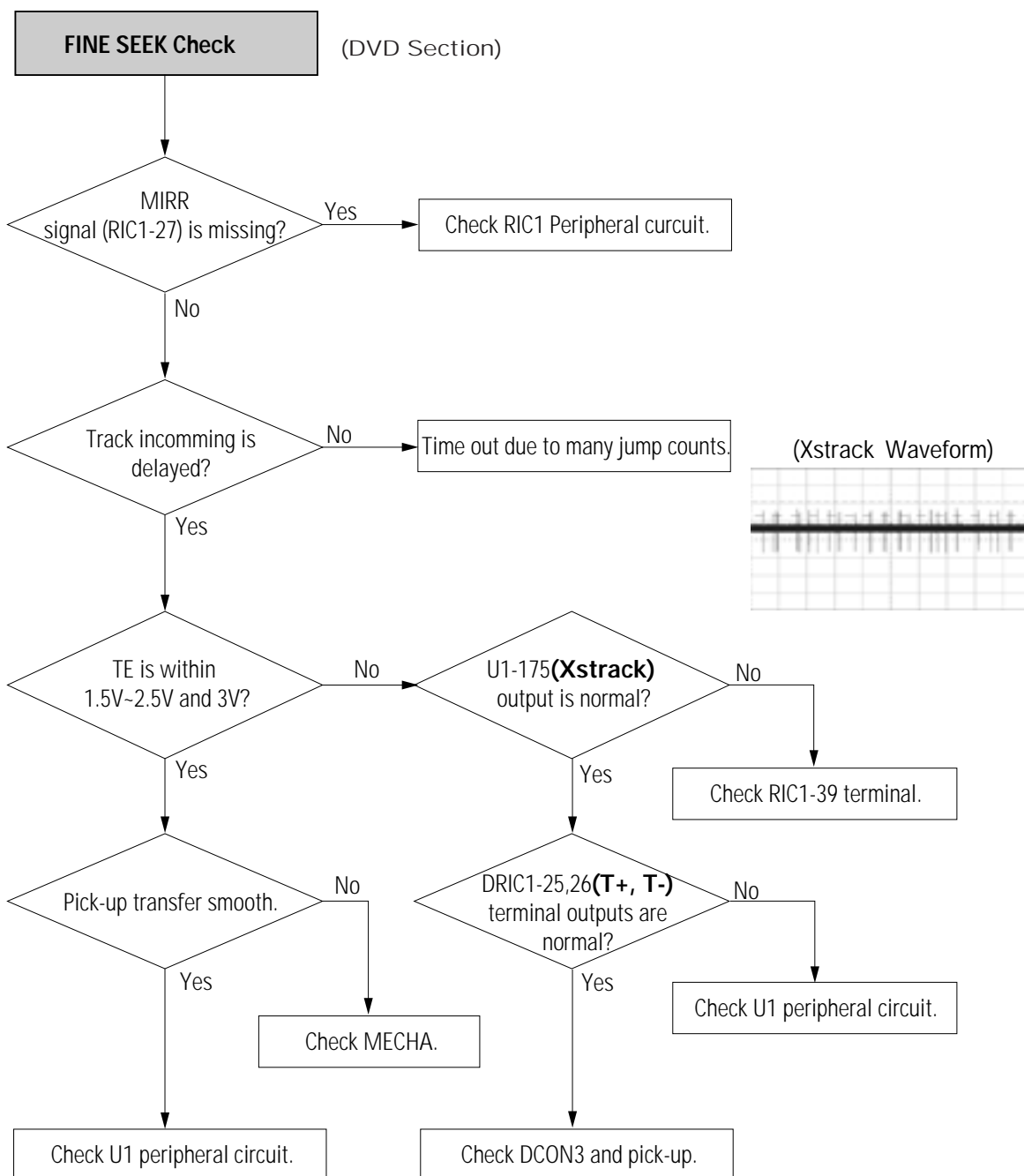


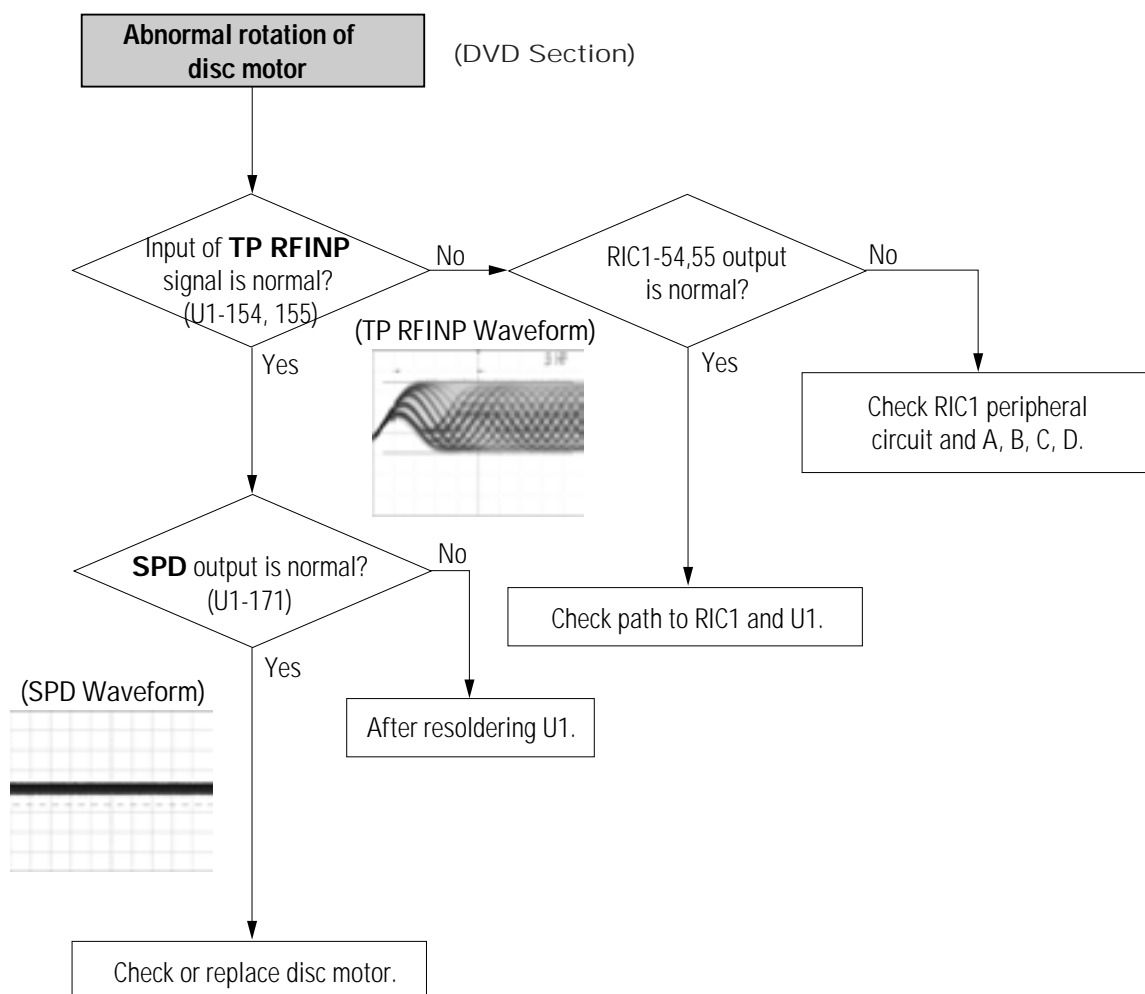


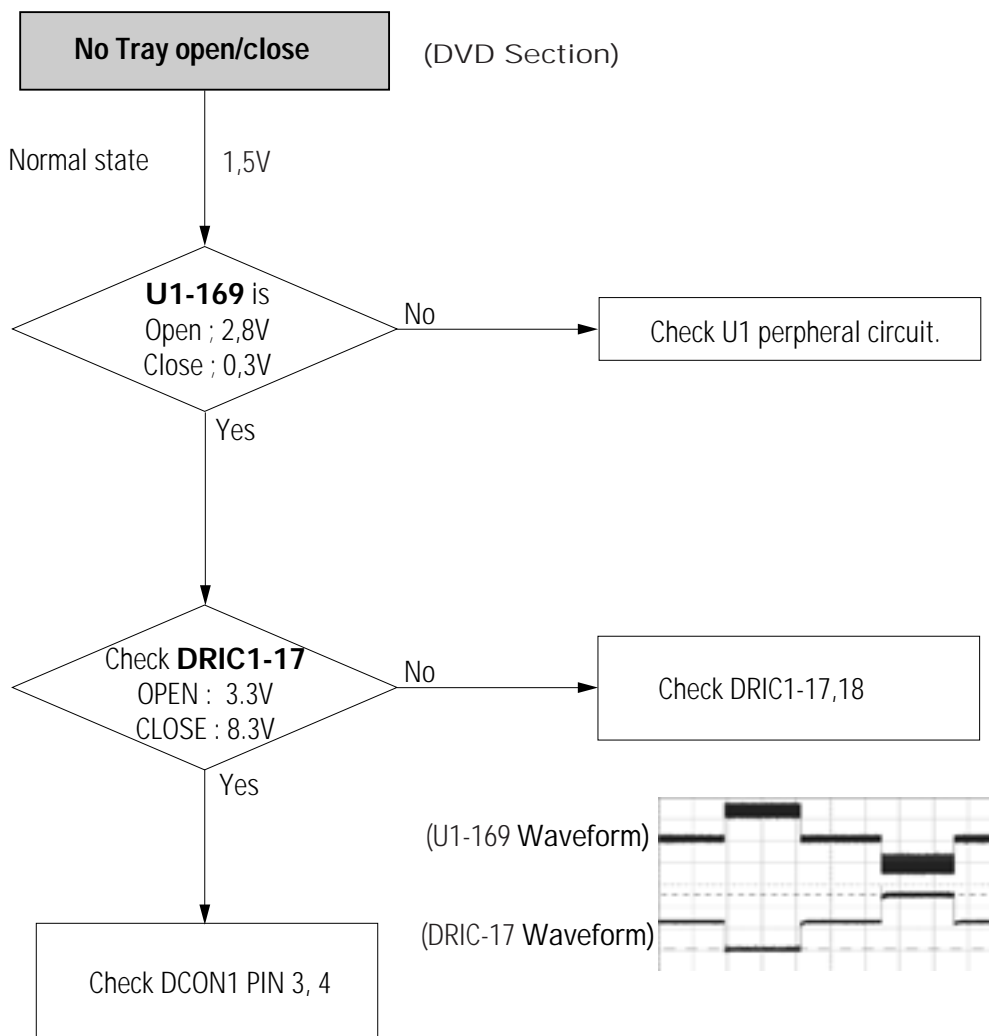


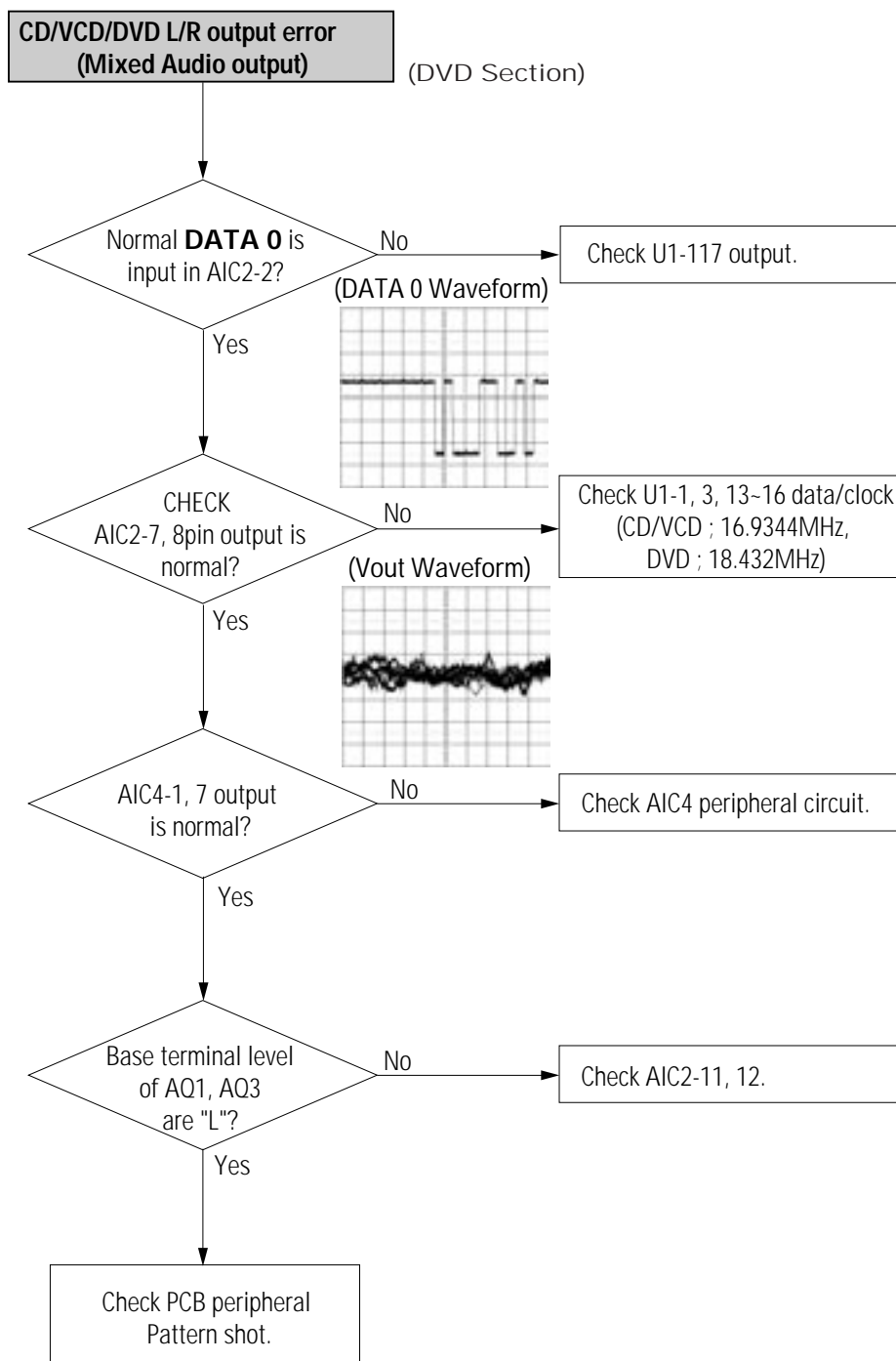


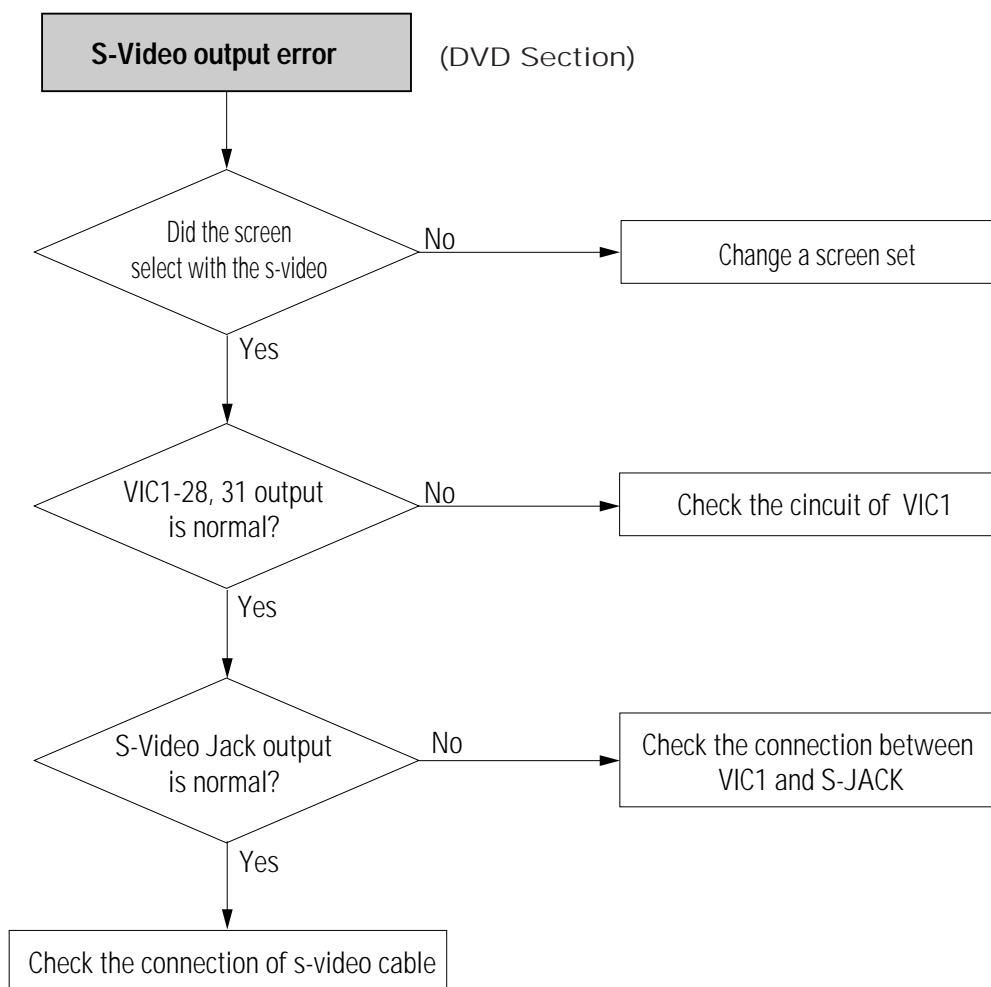


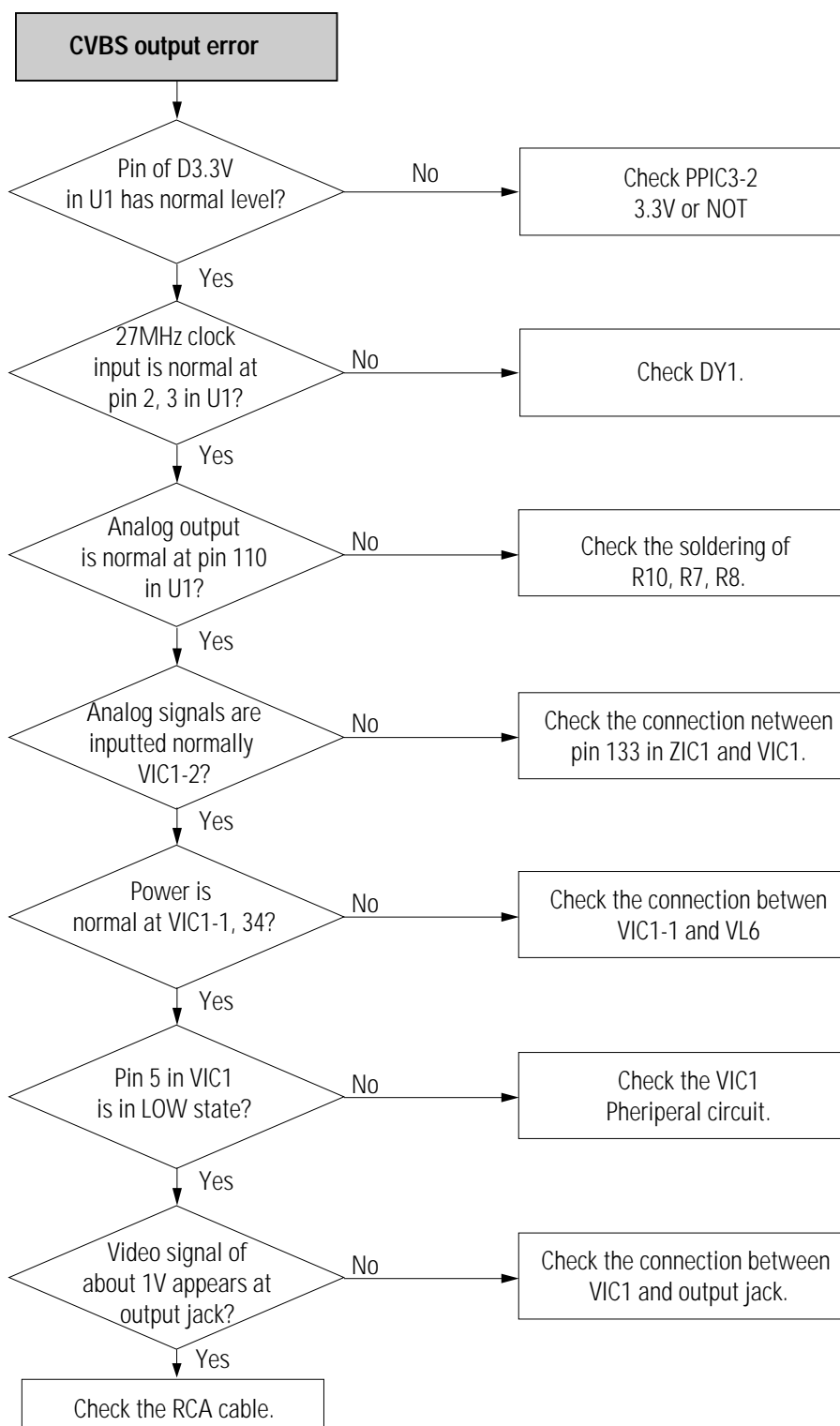










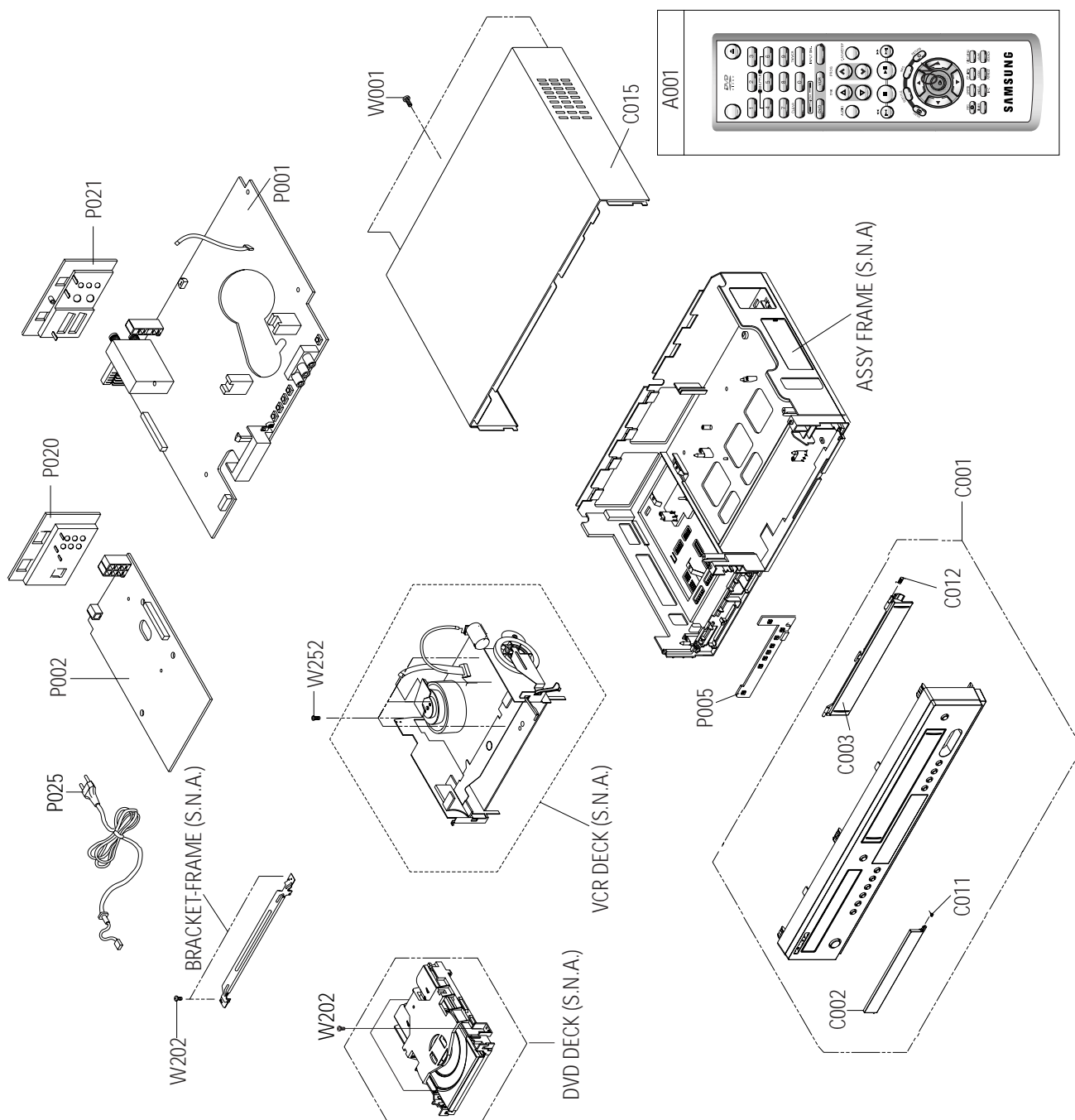


MEMO

6. Exploded View and Parts List

6-1 Cabinet Assembly	6-2
6-2 VCR Mechanical Parts (Top Side)	6-4
6-3 VCR Mechanical Parts (Bottom Side)	6-6
6-4 DVD Mechanical Parts	6-8

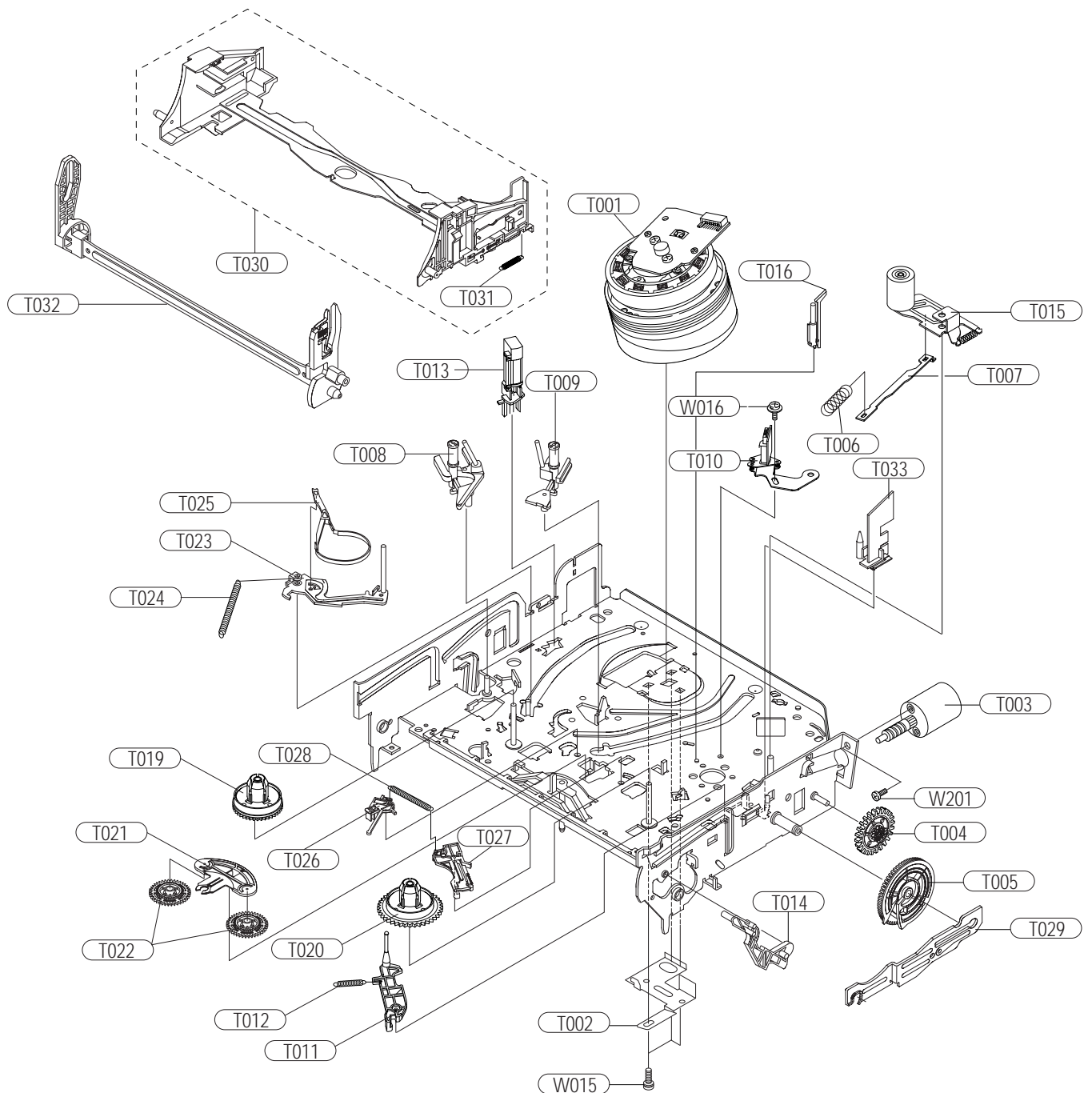
6-1 Cabinet Assembly



● S.N.A.: Service Not Available

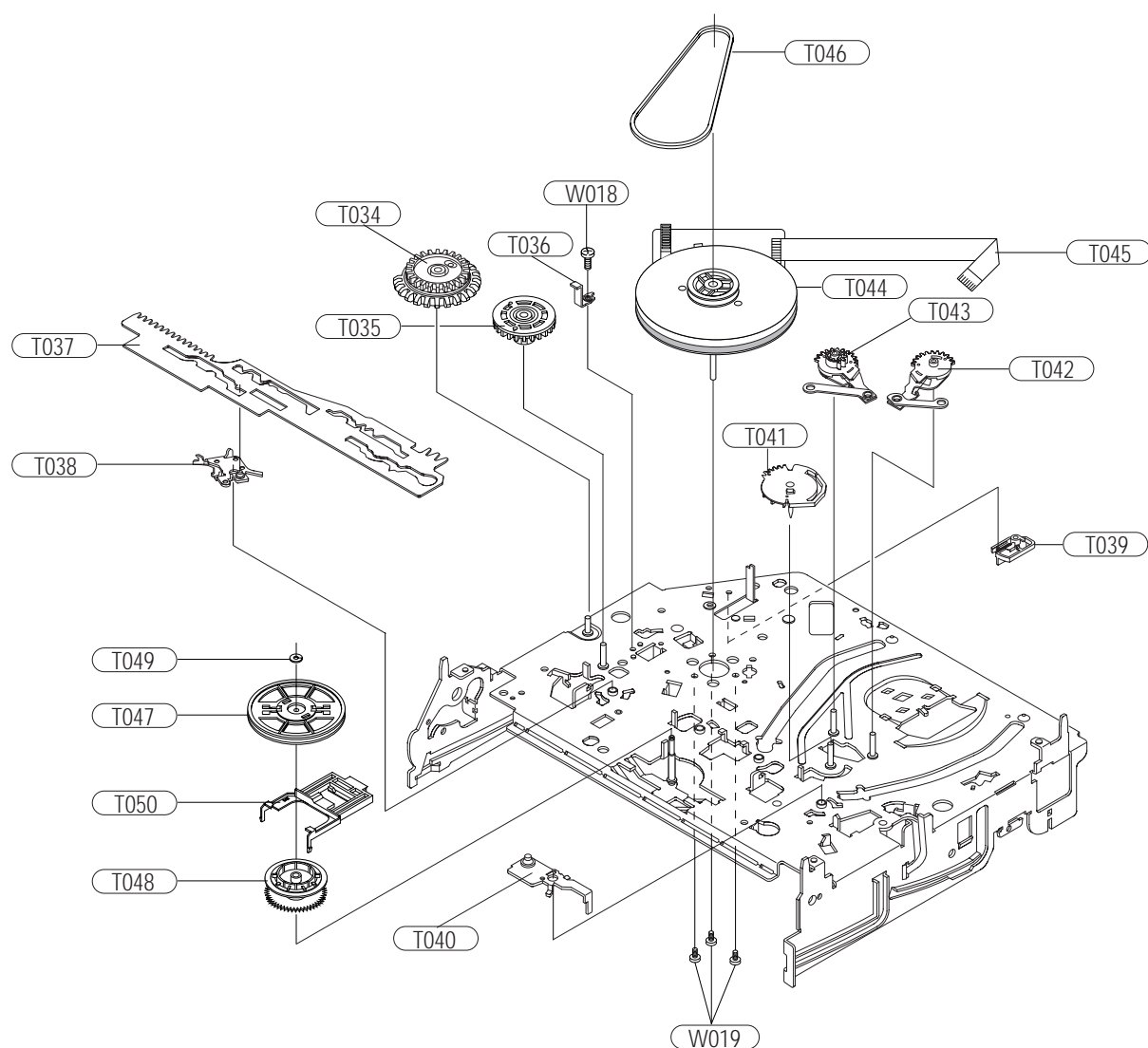
Loc. No	Parts No.	Description ; Specification	Q'ty	S.N.A	Remark
A001	AK59-00008D	REMOCON-ASSY;SV-DVD50,SAMSUNG,-,-,44,-,-	1	SA	
C001	AK97-01278A	ASSY-PANEL FRONT;HIPS94HB,DVD-V5450/XEC,	1	SA	DVD-V5450 Other Only
	AK97-01278B	ASSY-PANEL FRONT;HIPS94HB,DVD-V5450/XEF,	1	SA	DVD-V5450/XEB Only
	AK97-01278B	ASSY-PANEL FRONT;HIPS94HB,DVD-V5450/XEF,	1	SA	DVD-V5450/XEF Only
	AK97-01278G	ASSY-PANEL FRONT;HIPS94HB,DVD-V5350/XET,	1	SA	DVD-V5350 Only
	AK97-01278E	ASSY-PANEL FRONT;HIPS94HB,DVD-V6400/XEC,0	1	SA	DVD-V6400 Other Only
	AK97-01278D	ASSY-PANEL FRONT;HIPS94HB,DVD-V6400/XEF,	1	SA	DVD-V6400/XEB Only
	AK97-01278D	ASSY-PANEL FRONT;HIPS94HB,DVD-V6400/XEF,	1	SA	DVD-V6400/XEF Only
	AK97-01278C	ASSY-PANEL FRONT;HIPS94HB,DVD-V6450/XET,0	1	SA	DVD-V6450 Only
	AK97-01194C	ASSY-PANEL;HIPS 94HB,DVD-V6500/XEU,05-SE	1	SA	DVD-V6500 Only
	AK97-01193D	ASSY-PANEL;HIPS 94HB,DVD-V5500/XEU,05-SEC	1	SA	DVD-V5500 Only
C002	AK64-01024A	DOOR-TRAY;DVD-V5500,ABS 94HB,T3.5,-,W18.	1	SA	DVD-V6500/V5500 Only
	AK64-00433D	DOOR-TRAY;SV-DVD545/XEF,ABS 94HB,-,-,W13	1	SA	Other Only
C003	AK64-00432T	DOOR-CASSETTE;DVD-V5450/XEC,ABS,T2.2,H28	1	SA	DVD-V5450 Only
	AK64-00432Y	DOOR-CASSETTE;DVD-V5350/XET,ABS,T2.2,H28	1	SA	DVD-V5350 Only
	AK64-00432W	DOOR-CASSETTE;DVD-V6400/XEC,ABS,T2.2,H28,	1	SA	DVD-V6400 Other Only
	AK64-00432V	DOOR-CASSETTE;DVD-V6400/XEF,ABS,T2.2,H28	1	SA	DVD-V6400/XEB Only
	AK64-00432V	DOOR-CASSETTE;DVD-V6400/XEF,ABS,T2.2,H28	1	SA	DVD-V6400/XEF Only
	AK64-00432U	DOOR-CASSETTE;DVD-V6450/XET,ABS,T2.2,H28,	1	SA	DVD-V6450 Only
	AK64-01025L	DOOR-CASSETTE A;DVD-V6500/XEU,ABS 94HB,T	1	SA	DVD-V6500 Only
	AK64-01025C	DOOR-CASSETTE A;DVD-V5500/XEU,ABS 94HB,T2	1	SA	DVD-V5500 Only
C011	AK64-00334A	DOOR-SPRING;DVD-V3500,SWPB,,,,,-,-	1	SA	
C012	AC61-62032A	SPRING ETC-MASK;SV-C130,SUS,4.4,-,-,-,-,-	1	SA	
C015	AK64-00536B	CABINET-TOP;SV-DVD440,PCM,T0.5,W430,L223	1	SA	
P001	AK92-00610H	ASSY PCB-VCR MAIN;DVD-V6500/EUR,1HOUR,2S	1	SA	DVD-V6500/V5500 Only
	AK92-00710B	ASSY PCB-VCR MAIN;DVD-V6400/XEB,W/O TM,4	1	SA	SECAM Only
	AK92-00710F	ASSY PCB-VCR MAIN;DVD-V6400/XEG,W/O,TM,4H	1	SA	A2 Models Only
	AK92-00710H	ASSY PCB-VCR MAIN;DVD-V6400/EUR,W/O,TM,4	1	SA	BACK-UP 1Hour Only
	AK92-00710D	ASSY PCB-VCR MAIN;DVD-V6400/XEU,W/O,TM,4	1	SA	Other Only
P002	AK92-00609B	ASSY PCB-DVD MAIN;DVD-V6500/XEF,Mpeg,Cox,	1	SA	DVD-V64XX/V6500 Only
	AK92-00609A	ASSY PCB-DVD MAIN;DVD-V5500/XEF,w/o Mpeg	1	SA	Other Only
P005	AK94-00066A	ASSY SORT-FUNCTION;DVD-V6500/XEF,FUNCTIO	1	SA	
P020	AK97-00814B	ASSY-CONNECTOR BOARD;HIPS 94HB,DVD-V340,	1	SA	
P021	AK61-00308A	CONNECTOR-BOARD VCR;SV-DVD440,HIPS 94HB,	1	SA	
P025	AC39-10019A	CBF-POWER CORD;KKP-419C,H03VVH2-F,VDE/KE	1	SA	Other Only
	AC39-12022K	CBF-POWER CORD;AT,,GP2,HOUING(2P),250V,3	1	SA	U.K Only
W001	6003-000275	SCREW-TAPTITE;BH,+,B,M3,L10,BLK ,SWCH101	3	SA	
W202	6003-000277	SCREW-TAPTITE;BH,+,B,M3,L12,ZPC(YEL),SWR	5	SA	
W252	AC60-12126A	SCREW-MACHINE;-,-,FE,FZY,BH,-,-,4*12,-,-	4	SA	

6-2 VCR Mechanical Parts (Top Side)



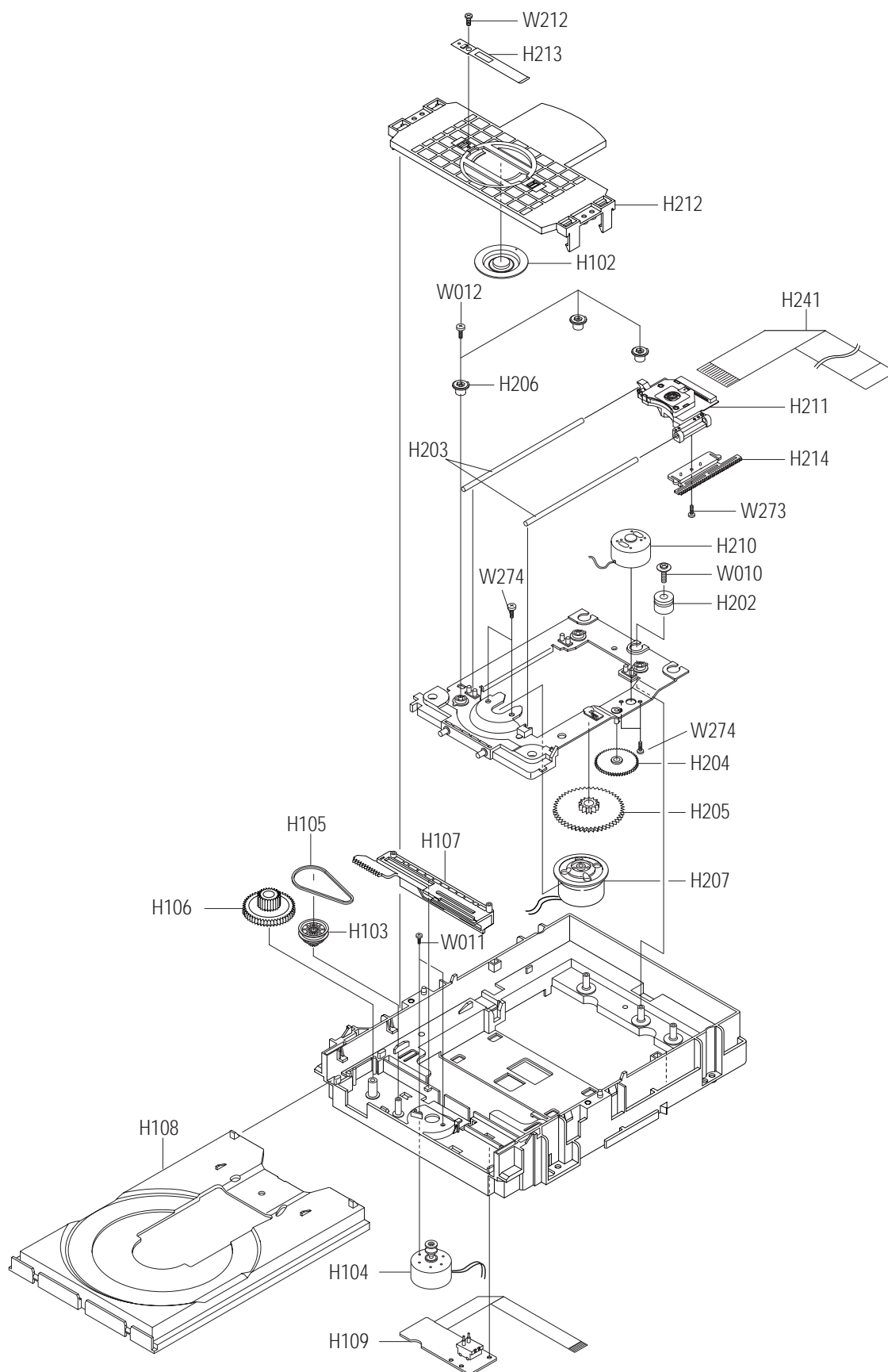
Loc. No	Parts No.	Description ; Specification	Q'ty	S.N.A	Remark
T001	AC97-02536A	ASSY-CYLINDER;6S,CX11A-SEM,SECAM 6HD	1	SA	
T002	AC70-00002A	PLATE-GND DECK;X-11,SPTT,T0.3,-,-,-,-	1	SA	
T003	AC31-00018A	MOTOR-LOADING ASSY;-SCORPIO2(TS-10A),-,	1	SA	
T004	AC66-00008A	GEAR-WORM WHEEL;TS-10,POM,0.8,40,-,NAT,3	1	SA	
T005	AC66-00011A	GEAR-FL CAM;TS-10,POM,0.8,59,-,BLK,48.48	1	SA	
T006	AC61-00105A	SPRING ETC-PINCH DRIVE;TS-10,SUS304-WPB,	1	SA	
T007	AC61-30180A	PLATE-JOINT;X-9,SECC20/20,T0.8,-,-,-,-	1	SA	
T008	AC66-80142A	SLIDER-SUPPLY ASSY;X-9,SUS,-,-,-,-,SIL,-	1	SA	
T009	AC66-80141A	SLIDER-TAKE UP ASSY;X-9,SUS,-,-,-,-,SIL,-	1	SA	
T010	AC97-02517A	ASSY-HEAD ACE;ASSY-HEAD ACE,DX11A,DX11A	1	SA	
T011	AC66-00074A	LEVER-GUIDE(#9);TS-9,PPS,-,-,-,-,BLK,KHA	1	SA	
T012	AC61-60553A	SPRING ETC-GUIDE 9;X-9,SUS304-WPB,0.25,-	1	SA	
T013	AC33-00015A	HEAD-FE;HVFHP0050A,PBT3300,2PIN,NATURA	1	SA	
T014	AC66-00083A	LEVER-FL DOOR;X-11,POM(K300),-,-,-,-,BLU	1	SA	
T015	AC97-02293A	ASSY-UNIT PINCH;SECC+SUS304,TS-10,FOR X-	1	SA	
T016	AC97-02215A	ASSY-POST #8 GUIDE;SUS303+POM(M90-44)EQ,	1	SA	
T019	AC66-10267A	REEL-DISK S;X-9,POM,-,-,-,-,-	1	SA	
T020	AC66-10268A	REEL-DISK T;X-9,POM,-,-,-,-,-	1	SA	
T021	AC66-30524A	LEVER-IDLER;-POM,-,-,-,-,BLK,-	1	SA	
T022	AC66-00039A	GEAR-IDLE;TS-10,PET K3372,0.5,-,-,NTR,28	2	SA	
T023	AC66-00035A	LEVER-TENSION ASSY;TS-10,SECC E20/20+SU	1	SA	
T024	AC61-00107A	SPRING ETC-TENSION LEVER;TS-10,SUS304-WP	1	SA	
T025	AC69-00104A	BAND-BRAKE ASSY;TS-10,-,-,-,-,-	1	SA	
T026	AC66-30550A	LEVER-S.BRAKE ASSY;-POM+SUS,-,-,-,-,X-9	1	SA	
T027	AC66-30549A	LEVER-T.BRAKE ASSY;-POM+SUS,-,-,-,-,X-9	1	SA	
T028	AC61-00106A	SPRING ETC-BRAKE;TS-10,SUS304-WPB,-,-,-,-	1	SA	
T029	AC66-00020A	SLIDER-FL DRIVE;TS-10,SECC ,T1.0,-,-,-,SIL	1	SA	
T030	AC97-02323A	ASSY-HOLDER FL CASSETTE;SECC+POM,X-11,Fo	1	SA	
T031	AC61-60561A	SPRING ETC-FL LEVER-LR;X-9,SUS304 WPB,OD	1	SA	
T032	AC97-02324A	ASSY-LEVER FL ARM;SECC+POM,X-11,For X-11	1	SA	
T033	AC61-50658A	GUIDE-CASS. DOOR;X-9,POM,-,-,-,-,NTR	1	SA	
W015	6006-001092	SCREW-MACHINE;WS,PH,+,M3.0,L6.0,ZPC(YEL)	3	SA	
W016	6006-001154	SCREW-TAPTITE;WSP,PH,+,M2.6,L5.6,ZPC(YEL)	1	SA	
W201	6001-001711	SCREW-MACHINE;PH,+,M3,L3.3,ZPC(YEL)	1	SA	

6-3 VCR Mechanical Parts (Bottom Side)



Loc. No	Parts No.	Description ; Specification	Q'ty	S.N.A	Remark
T034	AC66-00076A	GEAR-JOINT 1;X-11,POM(K300),-, -, -,BLUE,-	1	SA	
T035	AC66-00077A	GEAR-JOINT 2;X-11,POM(K300),-, -, -,BLUE,-	1	SA	
T036	AC61-00338A	BRACKET-GEAR;X-11,SECC,T0.8,W20,L20,NTR,	1	SA	
T037	AC66-00075A	SLIDER-CAM;X-11,SECC ,T1.2,-, -, -,SIL,-	1	SA	
T038	AC66-00017A	LEVER-PINCH DRIVE;TS-10,SECC E20/20,1.0	1	SA	
T039	AC70-00003A	HOOK-CAPSTAN;-, -,L10,W10,H10,POM(M90-44)	1	SA	
T040	AC66-00016A	LEVER-TENSION DRIVE;TS-10,SECC E20/20,1	1	SA	
T041	AC66-00078A	GEAR-LOADING DRIVE;X-11,POM(K300),-, -, -,	1	SA	
T042	AC97-02195A	ASSY-LEVER LOADING S;SECC+POM+SUS,X-11,F	1	SA	
T043	AC97-02196A	ASSY-LEVER LOADING T;SECC+POM+SUS,X-11,F	1	SA	
T044	3101-001419	MOTOR-CAPSTAN;-, -,12V,90mA	1	SA	
T045	3809-001270	CABLE-FLAT;30V,80C,140MM,10P,1.25MM,UL28	1	SA	
T046	AC66-60051A	BELT-PULLEY;-,5CM-70,2 * 2,-,71.3,-,X-9	1	SA	
T047	AC61-21012A	HOLDER-CLUTCH ASSY;X-9,ABS,-, -, -,BLK,-	1	SA	
T048	AC66-20581A	GEAR-CENTER ASSY;X-9,POM,M=0.5,-, -, -,GRY,-	1	SA	
T049	AC60-30306A	FASTENER-WASHER SLIT;-, -,ID2.1,OD5.0,T0.	1	SA	
T050	AC66-00006A	LEVER-UP DOWN;TS-10,POM,-, -, -, -,NAT,-	1	SA	
W018	6003-001450	SCREW-TAPTITE;PH,+,S,M2.6,L5,ZPC(YEL)	1	SA	
W019	6003-000108	SCREW-TAPTITE;BH,+,B,M2.6,L6,ZPC(YEL),SW	3	SA	

6-4 DVD Mechanical Parts



Loc. No	Parts No.	Description ; Specification	Q'ty	S.N.A	Remark
H102	AK61-00360A	BODY CLAMPER-DISC;DP-16,POM,T0.7,-,-,-,W	1	SA	
H103	AK66-00042A	GEAR-PULLEY;DP-15,POM,-,-,-,WHT,-,-,-	1	SA	
H104	AK97-00608A	ASSY-MOTOR LOAD;-,-,DP-15,-	1	SA	
H105	6602-001076	BELT-RECTANGULAR;CR,T1.2,4.3%,1.2X25.1,B	1	SA	
H106	AK66-00041A	GEAR-TRAY;DP-15,POM,-,-,-,WHT,-,-,-	1	SA	
H107	AK66-00045A	SLIDER HOUSING;DP-15,POM,-,W17.8,L90,WHT	1	SA	
H108	AK63-00101D	TRAY-DISC;DP-16,ABS,-,W120,L186.3,-,GRY,	1	SA	
H109	AK92-00328A	ASSY PCB-DECK;DP-15,-	1	SA	
H202	AK73-00005B	RUBBER-INSULATOR;DP-15,BUTYL,•'12,HS30,H	1	SA	
H203	AH61-50327A	SHAFT-P/U;DP-3,SUS,L84.7,OD3,-,-,-	2	SA	
H204	AK66-00043A	GEAR-FEED A;DP-15,POM,-,-,-,-,-,-,-	1	SA	
H205	AK66-00044A	GEAR-FEED B;DP-15,POM,-,-,-,-,-,-,-	1	SA	
H206	AK61-00363A	HOLDER-CAM SKEW;DP-16,POM,-,-,-,BLK,-	3	SA	
H207	AK31-00017A	MOTOR DC-SPINDLE;RF300FA-12350,DP-17,-,-,-	1	SA	
H210	AK31-00005A	MOTOR-FEED ASSY;-,-,DP-9,-,-,-,-,-,-,-,-	1	SA	
H211	AK97-01009B	ASSY-PICK UP;-,-,DP-16,MITSUMI VE	1	SA	
H212	AK61-00359A	HOLDER-CHUCK;DP-16,POM,T3,W140,L96,BLK,-	1	SA	
H213	AK61-00357A	SPRING ETC-CLAMPER;-,-,SUS304CSP,-,-,-,-,-	1	SA	
H214	AK66-00057A	GEAR-BACKLASH;DP-16,POM,0.5,-,-,-,WHT,-,RA	1	SA	
H241	AK41-00250A	FFC-PU;DP-17,-,-,-,23P,-,1mm	1	SA	
W010	6003-001157	SCREW-TAPTITE;PWH,+,B,M2,L6,ZPC(YEL),SWR	1	SA	
W011	6001-001370	SCREW-MACHINE;CH,+,M1.7,L3.0,ZPC(YEL),SW	2	SA	
W012	6002-001086	SCREW-TAPPING;PH,+,B,M1.7,L5.0,ZPC(YEL),	3	SA	
W212	6003-001251	SCREW-TAPTITE;CH,+,B,M1.7,L3,ZPC(YEL),SW	1	SA	
W273	6003-000233	SCREW-TAPTITE;PH,+,B,M2,L6,ZPC(BLK),SWRC	1	SA	
W274	6001-001730	SCREW-MACHINE;BH,+,M1.7,L2.5,ZPC(YEL)	4	SA	

MEMO

7. Electrical Parts List

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark	Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
P001	AK92-00610H	ASSY PCB-VCR MAIN:DVD-V6500/EUR,1HOUR,2S	1		SADVD-V6500/V5500 Only	C318	2401-000588	C-AL:1uF,20%,50V,GP,TP,3x5,2,5	1	SA	
	AK92-00710B	ASSY PCB-VCR MAIN:DVD-V6400/XEB,W/O,TM,4	1	SA	SECAM Only	C319	2203-000843	C-CER,CHIP:39nF,10%,25V,X7R,TP,1608,-	1	SA	
	AK92-00710F	ASSY PCB-VCR MAIN:DVD-V6400/XEG,W/O,TM,4H	1	SA	A2 Models Only	C320	2203-000975	C-CER,CHIP:47nF,10%,25V,X7R,TP,1608,-	1	SA	
	AK92-00710H	ASSY PCB-VCR MAIN:DVD-V6400/EUR,W/O,TM,4	1	SA	BACK-UP 1Hour Only	C321	2203-002398	C-CER,CHIP:22nF,10%,50V,X7R,TP,1608	1	SA	
	AK92-00710D	ASSY PCB-VCR MAIN:DVD-V6400/XEU,W/O,TM,4	1	SA	Other Only	C322	2401-000588	C-AL:1uF,20%,50V,GP,TP,3x5,2,5	1	SA	
BD1S01	AC27-92001M	COIL-INDUCTOR:RH3.5X6.5RS,BEAD(RADIAL),-	1	SA		C324	2203-000257	C-CER,CHIP:10nF,10%,50V,X7R,TP,1608	1	SA	
BD1S02	AC27-92001M	COIL-INDUCTOR:RH3.5X6.5RS,BEAD(RADIAL),-	1	SA		C325	2401-001502	C-AL:47uF,20%,16V,GP,TP,6.3x5,2,5	1	SA	
BD1SS3	AC27-92001M	COIL-INDUCTOR:RH3.5X6.5RS,BEAD(RADIAL),-	1	SA		C326	2401-000588	C-AL:1uF,20%,50V,GP,TP,3x5,2,5	1	SA	
BD701	3301-001419	BEAD-SMD;-;220,-;500,TP,-;0.3	1	SA		C327	2203-001211	C-CER,CHIP:8.2nF,10%,50V,X7R,TP,1608	1	SA	
BD702	3301-001419	BEAD-SMD;-;220,-;500,TP,-;0.3	1	SA		C328	2203-000257	C-CER,CHIP:10nF,10%,50V,X7R,TP,1608	1	SA	
BD703	3301-001419	BEAD-SMD;-;220,-;500,TP,-;0.3	1	SA		C329	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
C1P101	2401-003480	C-AL:1000uF,20%,10V,LZ,TP,10X16MM,5	1	SA		C330	2203-000975	C-CER,CHIP:47nF,10%,25V,X7R,TP,1608,-	1	SA	
C1P102	2401-003336	C-AL:4.7uF,20%,50V,GP,TP,5X5,2	1	SA		C331	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	BACK-UP 1Hour Only
C1P103	2401-002026	C-AL:10uF,20%,35V,GP,TP,5X5,2,5	1	SA		C331	2007-000070	R-CHIP:0ohm,5%,1/10W,TP,1608	1	SA	Not used
C1P104	2401-000588	C-AL:1uF,20%,50V,GP,TP,3x5,2,5	1	SA		C331	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	BACK-UP 1Hour
C1P105	2401-003336	C-AL:4.7uF,20%,50V,GP,TP,5X5,2	1	SA							Only
C1P106	2401-000463	C-AL:10uF,20%,35V,GP,-;5x5,5	1	SA		C331	2007-000070	R-CHIP:0ohm,5%,1/10W,TP,1608	1	SA	Not used DVD-V6500/V5500
C1P107	2401-002299	C-AL:4.7uF,20%,50V,GP,TP,5x7,5	1	SA		C331	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	SECAM Only
C1P109	2401-000414	C-AL:10uF,20%,16V,GP,TP,4x7,5	1	SA		C331	2007-000070	R-CHIP:0ohm,5%,1/10W,TP,1608	1	SA	Not used SECAM
C1P110	2401-000414	C-AL:10uF,20%,16V,GP,TP,4x7,5	1	SA		C332	2203-000975	C-CER,CHIP:47nF,10%,25V,X7R,TP,1608,-	1	SA	
C1P111	2401-000463	C-AL:10uF,20%,35V,GP,-;5x5,5	1	SA		C333	2401-000408	C-AL:10uF,20%,16V,GP,TP,3.5x5,2,5	1	SA	
C1P112	2401-002299	C-AL:4.7uF,20%,50V,GP,TP,5x7,5	1	SA		C334	2203-000975	C-CER,CHIP:47nF,10%,25V,X7R,TP,1608,-	1	SA	
C1P113	2401-000598	C-AL:1uF,20%,50V,GP,TP,4x7,5	1	SA		C334A	2203-000236	C-CER,CHIP:0.1nF,5%,50V,COG,TP,1608	1	SA	
C1P114	2401-002165	C-AL:100uF,20%,16V,GP,TP,6.3x7,5	1	SA		C335	2203-001652	C-CER,CHIP:470nF,+80-20%,16V,Y5V,TP,1608	1	SA	
C1P115	2401-002165	C-AL:100uF,20%,16V,GP,TP,6.3x7,5	1	SA		C336	2203-000975	C-CER,CHIP:47nF,10%,25V,X7R,TP,1608,-	1	SA	
C1P116	2401-002299	C-AL:4.7uF,20%,50V,GP,TP,5x7,5	1	SA		C337	2203-001652	C-CER,CHIP:470nF,+80-20%,16V,Y5V,TP,1608	1	SA	
C1P117	2203-005065	C-CER,CHIP:100nF,+80-20%,10V,Y5V,1608	1	SA		C338	2203-000609	C-CER,CHIP:22nF,10%,50V,X7R,TP,2012	1	SA	
C1SD12	2305-001029	C-FILM,LEAD-PEF-10nF,10%,630V,TP,12x9x12	1	SA		C339	2401-000408	C-AL:10uF,20%,16V,GP,TP,3.5x5,2,5	1	SA	
C1SD13	2301-000383	C-FILM,LEAD-PEF-10nF,5%,50V,TP,6x7x3.2mm	1	SA		C340	2401-004014	C-AL:4.7uF,20%,16V,-;TP,4x5,2,5	1	SA	
C1SD16	2201-000129	C-CERAMIC,DISC:0.1nF,10%,1KV,Y5P,TP,7X4MM	1	SA		C341	2401-003107	C-AL:47uF,20%,16V,GP,TP,5x7,5	1	SA	
C1SF02	2401-002608	C-AL:33uF,20%,35V,GP,TP,5x11,5	1	SA		C342	2202-002037	C-CERAMIC,MLC-AXIAL:100nF,80-20%,50V,Y5V	1	SA	
C1SS01	2301-001718	C-FILM,LEAD:47nF,10%,275V,BK,17*5*11mm,-	1	SA		C343	2203-005065	C-CER,CHIP:1000nF,+80-20%,10V,Y5V,1608	1	SA	
C1SS02	2301-001718	C-FILM,LEAD:47nF,10%,275V,BK,17*5*11mm,-	1	SA		C344	2203-000315	C-CER,CHIP:0.12nF,5%,50V,COG,TP,1608	1	SA	
C1SS03	2201-002044	C-CERAMIC,DISC:0.1nF,10%,400V,Y5P,TP,8.5	1	SA		C345	2203-001607	C-CER,CHIP:0.22nF,5%,50V,NPO,-;1608	1	SA	
C1SS05	2201-002044	C-CERAMIC,DISC:0.1nF,10%,400V,Y5P,TP,8.5	1	SA		C347	2203-005065	C-CER,CHIP:1000nF,+80-20%,10V,Y5V,1608	1	SA	
C1SS06	2201-002044	C-CERAMIC,DISC:0.1nF,10%,400V,Y5P,TP,8.5	1	SA		C348	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
C1SS10	2401-003303	C-AL:82uF,20%,400V,GPBK,22X30,10	1	SA		C349	2203-005065	C-CER,CHIP:1000nF,+80-20%,10V,Y5V,1608	1	SA	
C1SS11	2401-000598	C-AL:1uF,20%,50V,GP,TP,4x7,5	1	SA		C350	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
C1SS12	2401-002299	C-AL:4.7uF,20%,50V,GP,TP,5x7,5	1	SA		C351	2401-003107	C-AL:47uF,20%,16V,GP,TP,5x7,5	1	SA	
C1SS15	2401-001992	C-AL:2200uF,20%,10V,WT,TP,10X20MM,5	1	SA		C352	2401-000588	C-AL:1uF,20%,50V,GP,TP,3x5,2,5	1	SA	
C1SS16	2401-003480	C-AL:1000uF,20%,10V,LZ,TP,10X16MM,5	1	SA		C353	2401-000588	C-AL:1uF,20%,50V,GP,TP,3x5,2,5	1	SA	
C1SS17	2401-001992	C-AL:2200uF,20%,10V,WT,TP,10X20MM,5	1	SA		C354	2401-001502	C-AL:47uF,20%,16V,GP,TP,6.3x5,2,5	1	SA	
C1SS18	2401-001992	C-AL:2200uF,20%,10V,WT,TP,10X20MM,5	1	SA		C355	2203-000975	C-CER,CHIP:47nF,10%,25V,X7R,TP,1608,-	1	SA	
C1SS19	2401-000385	C-AL:10uF,20%,100V,GP,TP,6.3x11,5	1	SA		C355A	2203-000236	C-CER,CHIP:0.1nF,5%,50V,COG,TP,1608	1	SA	
C1SS21	2401-001126	C-AL:330uF,20%,25V,WT,TP,10x12.5,5	1	SA		C380	2203-002398	C-CER,CHIP:22nF,10%,50V,X7R,TP,1608	1	SA	
C1SS22	2401-001126	C-AL:330uF,20%,25V,WT,TP,10x12.5,5	1	SA		C384	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
C1SS26	2401-001126	C-AL:330uF,20%,25V,WT,TP,10x12.5,5	1	SA		C385	2401-002165	C-AL:100uF,20%,16V,GP,TP,6.3x7,5	1	SA	
C1SS27	2301-000129	C-FILM,LEAD-PEF-100nF,5%,50V,TP,10X9X4.3	1	SA		C392	2203-000257	C-CER,CHIP:10nF,10%,50V,X7R,TP,1608	1	SA	
C315	2203-000975	C-CER,CHIP:47nF,10%,25V,X7R,TP,1608,-	1	SA		C3A01	2401-002299	C-AL:4.7uF,20%,50V,GP,TP,5x7,5	1	SA	
C317	2401-000588	C-AL:1uF,20%,50V,GP,TP,3x5,2,5	1	SA							

Electrical Parts List

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
C3A02	2401-000922	C-AL:22uF,20%,16V,GP,TP,5x5,5	1	SA	
C3A08	2203-000257	C-CER,CHIP:10nF,10%,50V,X7R,TP,1608	1	SA	
C3A09	2203-001103	C-CER,CHIP:6.8nF,10%,50V,X7R,TP,1608,-	1	SA	
C3A10	2203-001211	C-CER,CHIP:8.2nF,10%,50V,X7R,TP,1608	1	SA	
C3A11	2301-001680	C-FILM,PEF:15nF,5%,50V,TP,6.3x3x7mm,-	1	SA	
C3A12	2401-002095	C-AL:47uF,20%,25V,GP,TP,6.3x5,5	1	SA	
C3A14	2202-000263	C-CERAMIC,MLC-AXIAL:470pF,10%,50V,Y5P,TP	1	SA	
C3A15	2203-000257	C-CER,CHIP:10nF,10%,50V,X7R,TP,1608	1	SA	
C3A16	2401-002299	C-AL:4.7uF,20%,50V,GP,TP,5x7,5	1	SA	
C3A17	2401-000414	C-AL:10uF,20%,16V,GP,TP,4x7,5	1	SA	
C3A18	2203-001126	C-CER,CHIP:0.68nF,10%,50V,X7R,1608	1	SA	
C3A21A	2203-001554	C-CER,CHIP:1.8nF,10%,50V,X7R,TP,1608	1	SA	
C3A23	2401-002069	C-AL:33uF,20%,16V,GP,TP,6.3x5,5	1	SA	
C3A24	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
C3A29	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
C3A30	2401-001502	C-AL:47uF,20%,16V,GP,TP,6.3x5,2,5	1	SA	
C3A40	2401-000414	C-AL:10uF,20%,16V,GP,TP,4x7,5	1	SA	
C3A41	2401-000588	C-AL:1uF,20%,50V,GP,TP,3x5,2,5	1	SA	
C3A70	2203-001126	C-CER,CHIP:0.68nF,10%,50V,X7R,1608	1	SA	
C3S01	2203-000257	C-CER,CHIP:10nF,10%,50V,X7R,1608	1	SA	SECAM Only
C3S02	2401-000598	C-AL:1uF,20%,50V,GP,TP,4x7,5	1	SA	SECAM Only
C3S03	2203-000257	C-CER,CHIP:10nF,10%,50V,X7R,1608	1	SA	SECAM Only
C3S04	2401-000598	C-AL:1uF,20%,50V,GP,TP,4x7,5	1	SA	SECAM Only
C3S05	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	SECAM Only
C3S06	2401-001324	C-AL:0.47uF,20%,50V,GP,BK,3X5,2,5	1	SA	SECAM Only
C3S07	2007-000070	R-CHIP:0ohm,5%,1/10W,TP,1608	1	SA	SECAM Only
C3S08	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	SECAM Only
C3S09	2401-001324	C-AL:0.47uF,20%,50V,GP,BK,3X5,2,5	1	SA	SECAM Only
C3S10	2401-003107	C-AL:47uF,20%,16V,GP,TP,5x7,5	1	SA	SECAM Only
C3S11	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	SECAM Only
C3S12	2203-000491	C-CER,CHIP:2.2nF,10%,50V,X7R,TP,1608,-	1	SA	SECAM Only
C3S13	2203-000491	C-CER,CHIP:2.2nF,10%,50V,X7R,TP,1608,-	1	SA	SECAM Only
C3S14	2401-000665	C-AL:2.2uF,20%,50V,GP,TP,3.5x5,5	1	SA	SECAM Only
C3S15	2203-000440	C-CER,CHIP:1nF,10%,50V,X7R,TP,6.3x11,5	1	SA	SECAM Only
C401	2401-003107	C-AL:47uF,20%,16V,GP,TP,5x7,5	1	SA	
C402	2203-002398	C-CER,CHIP:22nF,10%,50V,X7R,TP,1608	1	SA	
C403	2401-001502	C-AL:47uF,20%,16V,GP,TP,6.3x5,2,5	1	SA	
C404	2401-001077	C-AL:330nF,20%,50V,GP,TP,4x7mm,5mm	1	SA	
C405	2401-002438	C-AL:47uF,20%,50V,WT,TP,6.3x11,5	1	SA	
C406	2203-000257	C-CER,CHIP:10nF,10%,50V,X7R,TP,1608	1	SA	
C407	2401-003107	C-AL:47uF,20%,16V,GP,TP,5x7,5	1	SA	Not used SECAM
C407	2401-003107	C-AL:47uF,20%,16V,GP,TP,5x7,5	1	SA	
C409	2401-002299	C-AL:4.7uF,20%,50V,GP,TP,5x7,5	1	SA	Not used SECAM
C409	2401-002299	C-AL:4.7uF,20%,50V,GP,TP,5x7,5	1	SA	
C410	2203-000257	C-CER,CHIP:10nF,10%,50V,X7R,TP,1608	1	SA	
C4N01	2203-000140	C-CER,CHIP:1.5nF,10%,50V,X7R,1608	1	SA	
C4N02	2401-000408	C-AL:10uF,20%,16V,GP,TP,3.5x5,2,5	1	SA	
C4N03	2203-001607	C-CER,CHIP:0.22nF,5%,50V,NP0,-,1608	1	SA	
C4N04	2401-000665	C-AL:2.2uF,20%,50V,GP,TP,3.5x5,5	1	SA	
C4N05	2203-000257	C-CER,CHIP:10nF,10%,50V,X7R,TP,1608	1	SA	
C4N06	2203-000257	C-CER,CHIP:10nF,10%,50V,X7R,TP,1608	1	SA	
C4N07	2203-001656	C-CER,CHIP:0.47nF,5%,50V,NP0,TP,1608	1	SA	
C4N08	2203-000140	C-CER,CHIP:1.5nF,10%,50V,X7R,1608	1	SA	
C4N09	2401-000408	C-AL:10uF,20%,16V,GP,TP,3.5x5,2,5	1	SA	
C4N10	2401-000408	C-AL:10uF,20%,16V,GP,TP,3.5x5,2,5	1	SA	

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
C4N11	2401-002186	C-AL:3.3uF,20%,50V,GP,BK,4x5,2,5	1	SA	
C4N12	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
C4N13	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
C4N14	2401-000408	C-AL:10uF,20%,16V,GP,TP,3.5x5,2,5	1	SA	
C4N15	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
C4N16	2401-001502	C-AL:47uF,20%,16V,GP,TP,6.3x5,2,5	1	SA	
C4N17	2203-001656	C-CER,CHIP:0.47nF,5%,50V,NP0,TP,1608	1	SA	
C4N18	2203-001656	C-CER,CHIP:0.47nF,5%,50V,NP0,TP,1608	1	SA	
C4N19	2203-000998	C-CER,CHIP:0.047nF,5%,50V,COG,TP,1608	1	SA	
C4N21	2201-002069	C-CERAMIC,DISC:0.0015nF,0.25PF,50V,COG,T	1	SA	
C4N22	2201-002069	C-CERAMIC,DISC:0.0015nF,0.25PF,50V,COG,T	1	SA	
C4N23	2401-000598	C-AL:1uF,20%,50V,GP,TP,4x7,5	1	SA	
C4N24	2401-000598	C-AL:1uF,20%,50V,GP,TP,4x7,5	1	SA	
C4N25	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
C4N30	2203-000257	C-CER,CHIP:10nF,10%,50V,X7R,TP,1608	1	SA	
C501	2401-000408	C-AL:10uF,20%,16V,GP,TP,3.5x5,2,5	1	SA	
C502	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
C503	2401-000909	C-AL:22uF,20%,16V,GP,TP,5x5,2,5	1	SA	
C504	2401-000408	C-AL:10uF,20%,16V,GP,TP,3.5x5,2,5	1	SA	
C505	2401-001249	C-AL:4.7uF,20%,35V,GP,TP,4x5,2,5	1	SA	
C506	2203-000257	C-CER,CHIP:10nF,10%,50V,X7R,TP,1608	1	SA	
C507	2401-000909	C-AL:22uF,20%,16V,GP,TP,5x5,2,5	1	SA	
C508	2203-000888	C-CER,CHIP:4.7nF,10%,50V,X7R,TP,1608	1	SA	
C510	2401-001502	C-AL:47uF,20%,16V,GP,TP,6.3x5,2,5	1	SA	
C511	2203-000257	C-CER,CHIP:10nF,10%,50V,X7R,TP,1608	1	SA	
C513	2203-000257	C-CER,CHIP:10nF,10%,50V,X7R,TP,1608	1	SA	
C517	2203-000888	C-CER,CHIP:4.7nF,10%,50V,X7R,TP,1608	1	SA	
C518	2401-000909	C-AL:22uF,20%,16V,GP,TP,5x5,2,5	1	SA	
C519	2203-000257	C-CER,CHIP:10nF,10%,50V,X7R,TP,1608	1	SA	
C520	2401-001249	C-AL:4.7uF,20%,35V,GP,TP,4x5,2,5	1	SA	
C521	2401-000408	C-AL:10uF,20%,16V,GP,TP,3.5x5,2,5	1	SA	
C522	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
C523	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
C524	2401-001249	C-AL:4.7uF,20%,35V,GP,TP,4x5,2,5	1	SA	
C525	2401-001249	C-AL:4.7uF,20%,35V,GP,TP,4x5,2,5	1	SA	
C526	2401-002165	C-AL:100uF,20%,16V,GP,TP,6.3x7,5	1	SA	
C527	2202-000797	C-CERAMIC,MLC-AXIAL:10nF,30%,16V,Y5S,TP,	1	SA	
C529	2401-001250	C-AL:4.7uF,20%,35V,GP,TP,4x5,5	1	SA	
C530	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
C535	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
C536	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
C537	2401-000665	C-AL:2.2uF,20%,50V,GP,TP,3.5x5,5	1	SA	
C538	2401-002569	C-AL:2.2uF,20%,50V,GP,TP,4x5,2,5	1	SA	
C539	2401-001250	C-AL:4.7uF,20%,35V,GP,TP,4x5,5	1	SA	
C540	2401-001250	C-AL:4.7uF,20%,35V,GP,TP,4x5,5	1	SA	
C541	2401-000588	C-AL:1uF,20%,50V,GP,TP,3x5,2,5	1	SA	
C601	2203-002398	C-CER,CHIP:22nF,10%,50V,X7R,TP,1608	1	SA	
C602	2401-002095	C-AL:47uF,20%,25V,GP,TP,6.3x5,5	1	SA	
C605	2203-000257	C-CER,CHIP:10nF,10%,50V,X7R,TP,1608	1	SA	
C606	2203-000257	C-CER,CHIP:10nF,10%,50V,X7R,TP,1608	1	SA	
C607	2401-000118	C-AL:1000uF,20%,10V,GP,TP,10x12.5,5	1	SA	
C607A	2401-003107	C-AL:47uF,20%,16V,GP,TP,5x7,5	1	SA	
C608	2401-002259	C-AL:10000uF,+80-20%,5.5V,-,TP,12.5x11.1	1	SA	BACK-UP 1Hour Only
C608	2401-002259	C-AL:10000uF,+80-20%,5.5V,-,TP,12.5x11.5	1	SA	SADVD-V6500/V5500 Only

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark	Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
C610	2202-002037	C-CERAMIC,MLC-AXIAL:100nF,80-20%,50V,Y5V	1	SA		C707	2401-001992	C-AL:2200uF,20%,10V,WT,TP,10X20MM,5	1	SA	
C618	2401-000360	C-AL:100uF,20%,50V,GP,TP,8x11.5,5	1	SA		C708A	2203-000257	C-CER,CHIP:10nF,10%,50V,X7R,TP,1608	1	SA	
C618A	2401-002095	C-AL:47uF,20%,25V,GP,TP,6.3x5,5	1	SA		C712	2203-000491	C-CER,CHIP:2.2nF,10%,50V,X7R,TP,1608,-	1	SA	
C619	2203-000257	C-CER,CHIP:10nF,10%,50V,X7R,TP,1608	1	SA		C714	2203-000491	C-CER,CHIP:2.2nF,10%,50V,X7R,TP,1608,-	1	SA	
C620	2401-001543	C-AL:47uF,20%,25V,GP,TP,6.3x5mm,2,5	1	SA		C812	2401-000922	C-AL:22uF,20%,16V,GP,TP,5x5,5	1	SA	
C621	2203-000257	C-CER,CHIP:10nF,10%,50V,X7R,TP,1608	1	SA		C813	2401-000922	C-AL:22uF,20%,16V,GP,TP,5x5,5	1	SA	
C623	2203-000257	C-CER,CHIP:10nF,10%,50V,X7R,TP,1608	1	SA		C814	2401-000922	C-AL:22uF,20%,16V,GP,TP,5x5,5	1	SA	
C624	2203-000626	C-CER,CHIP:0.022nF,5%,50V,COG,1608	1	SA	BACK-UP 1Hour Only	C815	2401-000922	C-AL:22uF,20%,16V,GP,TP,5x5,5	1	SA	
C624	2203-000626	C-CER,CHIP:0.022nF,5%,50V,COG,1608	1	SA	SA DVD-V6500/V5500 Only	C816	2401-002165	C-AL:100uF,20%,16V,GP,TP,6.3x7,5	1	SA	
C625	2203-000626	C-CER,CHIP:0.022nF,5%,50V,COG,1608	1	SA	BACK-UP 1Hour Only	C817	2203-000257	C-CER,CHIP:10nF,10%,50V,X7R,TP,1608	1	SA	
C625	2203-000626	C-CER,CHIP:0.022nF,5%,50V,COG,1608	1	SA	SA DVD-V6500/V5500 Only	C818	2203-000783	C-CER,CHIP:0.33nF,5%,50V,COG,TP,1608	1	SA	
C626	2203-000626	C-CER,CHIP:0.022nF,5%,50V,COG,TP,1608	1	SA		C819	2203-000783	C-CER,CHIP:0.33nF,5%,50V,COG,TP,1608	1	SA	
C627	2203-000626	C-CER,CHIP:0.022nF,5%,50V,COG,TP,1608	1	SA		C820	2203-000783	C-CER,CHIP:0.33nF,5%,50V,COG,TP,1608	1	SA	
C628	2203-000681	C-CER,CHIP:0.027nF,5%,50V,COG,TP,1608	1	SA		C821	2203-000783	C-CER,CHIP:0.33nF,5%,50V,COG,TP,1608	1	SA	
C631	2203-000257	C-CER,CHIP:10nF,10%,50V,X7R,TP,1608	1	SA		C822A	2203-000236	C-CER,CHIP:0.1nF,5%,50V,COG,TP,1608	1	SA	
C635	2203-000491	C-CER,CHIP:2.2nF,10%,50V,X7R,TP,1608,-	1	SA		C823	2203-000783	C-CER,CHIP:0.33nF,5%,50V,COG,TP,1608	1	SA	
C636	2203-000491	C-CER,CHIP:2.2nF,10%,50V,X7R,TP,1608,-	1	SA		C824	2203-000783	C-CER,CHIP:0.33nF,5%,50V,COG,TP,1608	1	SA	
C637	2203-001656	C-CER,CHIP:0.47nF,5%,50V,NPO,TP,1608	1	SA		C825	2203-000783	C-CER,CHIP:0.33nF,5%,50V,COG,TP,1608	1	SA	
C638	2401-002196	C-AL:4.7uF,20,25V,GP,TP,4X5,5MM,0	1	SA		C826	2203-000783	C-CER,CHIP:0.33nF,5%,50V,COG,TP,1608	1	SA	
C639	2203-000236	C-CER,CHIP:0.1nF,5%,50V,COG,TP,1608	1	SA		C835	2401-001479	C-AL:470uF,20%,10V,GP,TP,6.3*11mm,5	1	SA	
C640	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA		C837	2203-000257	C-CER,CHIP:10nF,10%,50V,X7R,TP,1608	1	SA	
C641	2401-003221	C-AL:100uF,20%,16V,GP,TP,8X5,2,5	1	SA		C840	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
C642	2401-002095	C-AL:47uF,20%,25V,GP,TP,6.3x5,5	1	SA		C844	2401-000414	C-AL:10uF,20%,16V,GP,TP,4x7,5	1	SA	Not used SECAM
C645	2203-000357	C-CER,CHIP:0.15nF,5%,50V,COG,TP,1608	1	SA		C844	2401-000414	C-AL:10uF,20%,16V,GP,TP,4x7,5	1	SA	
C646	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA		C845	2401-000414	C-AL:10uF,20%,16V,GP,TP,4x7,5	1	SA	Not used SECAM
C657	2203-000257	C-CER,CHIP:10nF,10%,50V,X7R,1608	1	SA	Not used A2 Models	C845	2401-000414	C-AL:10uF,20%,16V,GP,TP,4x7,5	1	SA	
C657	2203-000257	C-CER,CHIP:10nF,10%,50V,X7R,1608	1	SA	Not used BACK-UP 1Hour	C851	2401-000922	C-AL:22uF,20%,16V,GP,TP,5x5,5	1	SA	
C657	2203-000257	C-CER,CHIP:10nF,10%,50V,X7R,1608	1	SA	Not used DVD- V6500/V5500	C852	2401-000922	C-AL:22uF,20%,16V,GP,TP,5x5,5	1	SA	
C657	2203-000257	C-CER,CHIP:10nF,10%,50V,X7R,1608	1	SA	Not used SECAM	C853	2203-000888	C-CER,CHIP:4.7nF,10%,50V,X7R,TP,1608	1	SA	
C659A	2203-001140	C-CER,CHIP:68nF,10%,16V,X7R,TP,1608	1	SA		C854	2203-000888	C-CER,CHIP:4.7nF,10%,50V,X7R,TP,1608	1	SA	
C661	2202-002055	C-CERAMIC,MLC-AXIAL:47nF,+80-20%,50V,Y5V	1	SA		C857	2203-000888	C-CER,CHIP:4.7nF,10%,50V,X7R,TP,1608	1	SA	
C688	2401-003107	C-AL:47uF,20%,16V,GP,TP,5x7,5	1	SA		C858	2401-000922	C-AL:22uF,20%,16V,GP,TP,5x5,5	1	SA	
C691	2203-000257	C-CER,CHIP:10nF,10%,50V,X7R,TP,1608	1	SA		C890	2401-000922	C-AL:22uF,20%,16V,GP,TP,5x5,5	1	SA	
C695	2203-000357	C-CER,CHIP:0.15nF,5%,50V,COG,TP,1608	1	SA		CN01	3711-005565	CONNECTOR-HEADER:NOWALL,24P,1R,2mm,STRAI	1	SA	
C696	2203-000236	C-CER,CHIP:0.1nF,5%,50V,COG,TP,1608	1	SA		CN1SS1	3711-000203	CONNECTOR-HEADER:1WALL,2P,1R,7.92MM,STRA	1	SA	
C6P01	2203-000257	C-CER,CHIP:10nF,10%,50V,X7R,TP,1608	1	SA		CN301	3708-000391	CONNECTOR-FPC/FFC/PIC:10P,1.25mm,STRAIGH	1	SA	
C6P04	2203-000681	C-CER,CHIP:0.027nF,5%,50V,COG,TP,1608	1	SA		CN3A01	3708-001165	CONNECTOR-FPC/FFC/PIC:6P,1.25MM,STRAIGHT	1	SA	
C6P05	2203-000681	C-CER,CHIP:0.027nF,5%,50V,COG,TP,1608	1	SA		CN3A02	AC37-00028A	CONNECTOR-SOCKET:-X,11,T9,0,W8.5,PBT NT	1	SA	
C6P06	2203-000440	C-CER,CHIP:1nF,10%,50V,X7R,TP,1608,-	1	SA		CN604	AC37-00027A	CONNECTOR-HEADER:20045WS,X-11,T8.5,W17.4	1	SA	
C6P07	2401-002299	C-AL:4.7uF,20%,50V,GP,TP,5x7,5	1	SA		CN701A	3711-005312	CONNECTOR-HEADER:3WALL,6P,1R,2MM,STRAIGH	1	SA	
C6P08	2203-001071	C-CER,CHIP:0.056nF,5%,50V,COG,TP,1608	1	SA		D1P104	0401-000101	DIODE-SWITCHING:1N4148,75V,150MA,DO-35,T	1	SA	
C6P10	2401-000598	C-AL:1uF,20%,50V,GP,TP,4x7,5	1	SA		D1P105	0401-000101	DIODE-SWITCHING:1N4148,75V,150MA,DO-35,T	1	SA	
C6P11	2401-000598	C-AL:1uF,20%,50V,GP,TP,4x7,5	1	SA		D1P106	0401-000101	DIODE-SWITCHING:1N4148,75V,150MA,DO-35,T	1	SA	
C6P12	2401-002165	C-AL:100uF,20%,16V,GP,TP,6.3x7,5	1	SA		D1P107	0401-000101	DIODE-SWITCHING:1N4148,75V,150MA,DO-35,T	1	SA	
C6P13	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA		D1P108	0401-000101	DIODE-SWITCHING:1N4148,75V,150MA,DO-35,T	1	SA	
C6P15	2203-001140	C-CER,CHIP:68nF,10%,16V,X7R,TP,1608	1	SA		D1P130	0402-000127	DIODE-RECTIFIER:1N4002,100V,1A,DO-41,TP	1	SA	
C701	2401-002165	C-AL:100uF,20%,16V,GP,TP,6.3x7,5	1	SA		D1SF01	0401-000101	DIODE-SWITCHING:1N4148,75V,150MA,DO-35,T	1	SA	
C702	2203-000257	C-CER,CHIP:10nF,10%,50V,X7R,TP,1608	1	SA		D1SF02	0402-001195	DIODE-RECTIFIER:FT14,400V,1A,DO-204AC,TP	1	SA	
C703	2203-000440	C-CER,CHIP:1nF,10%,50V,X7R,TP,1608,-	1	SA		D1SS01	0402-001196	DIODE-RECTIFIER:1T5,600V,1A,TS-1,TP	1	SA	
C706	2203-000239	C-CER,CHIP:0.1nF,5%,50V,COG,TP,2012	1	SA		D1SS02	0402-001196	DIODE-RECTIFIER:1T5,600V,1A,TS-1,TP	1	SA	
						D1SS03	0402-001196	DIODE-RECTIFIER:1T5,600V,1A,TS-1,TP	1	SA	
						D1SS04	0402-001196	DIODE-RECTIFIER:1T5,600V,1A,TS-1,TP	1	SA	
						D1SS11	0402-000012	DIODE-RECTIFIER:UF4007,1KV,1A,DO-41,TP	1	SA	
						D1SS12	0404-001225	DIODE-SCHOTTKY:SRAIF560,60V,5000mA,I TO-22	1	SA	
						D1SS13	0404-001225	DIODE-SCHOTTKY:SRAIF560,60V,5000mA,I TO-22	1	SA	

Electrical Parts List

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
D1SS14	0404-001225	DIODE-SCHOTTKY:SRAF560,60V,5000mA,ITO-22	1	SA	
D1SS15	0402-001195	DIODE-RECTIFIER:FTT4,400V,1A,DO-204AC,TP	1	SA	
D1SS16	0402-001194	DIODE-RECTIFIER:SHG2D,200V,2A,-,TP	1	SA	
D1SS19	0402-001195	DIODE-RECTIFIER:FTT4,400V,1A,DO-204AC,TP	1	SA	
D301	0401-000101	DIODE-SWITCHING:1N4148,75V,150MA,DO-35,T	1	SA	
D302	0402-000127	DIODE-RECTIFIER:1N4002,100V,1A,DO-41,TP	1	SA	
D303	0401-000101	DIODE-SWITCHING:1N4148,75V,150MA,DO-35,T	1	SA	
D401	0402-000127	DIODE-RECTIFIER:1N4002,100V,1A,DO-41,TP	1	SA	
D4N01	0401-000101	DIODE-SWITCHING:1N4148,75V,150MA,DO-35,T	1	SA	
D4N02	0401-000101	DIODE-SWITCHING:1N4148,75V,150MA,DO-35,T	1	SA	
D501	0402-000127	DIODE-RECTIFIER:1N4002,100V,1A,DO-41,TP	1	SA	
D603	0401-000101	DIODE-SWITCHING:1N4148,75V,150MA,DO-35,T	1	SA	
D620	0402-000127	DIODE-RECTIFIER:1N4002,100V,1A,DO-41,TP	1	SA	
D688	0401-000101	DIODE-SWITCHING:1N4148,75V,150MA,DO-35,T	1	SA	
D692	0402-000127	DIODE-RECTIFIER:1N4002,100V,1A,DO-41,TP	1	SA	
D6P01	0401-000101	DIODE-SWITCHING:1N4148,75V,150MA,DO-35,T	1	SA	
D701	0401-000101	DIODE-SWITCHING:1N4148,75V,150MA,DO-35,T	1	SA	
D702	0401-000101	DIODE-SWITCHING:1N4148,75V,150MA,DO-35,T	1	SA	
D703	0401-000101	DIODE-SWITCHING:1N4148,75V,150MA,DO-35,T	1	SA	
D704	0401-000101	DIODE-SWITCHING:1N4148,75V,150MA,DO-35,T	1	SA	
D705	0401-000101	DIODE-SWITCHING:1N4148,75V,150MA,DO-35,T	1	SA	
D805	0401-000101	DIODE-SWITCHING:1N4148,75V,150MA,DO-35,T	1	SA	
DT701	AC07-00069A	LED DISPLAY:BCD-9027E,SV-DVD440,5-DIGIT,	1	SA	
F1SS01	3601-001123	FUSE-CARTRIDGE:250V,1.6A,TIME-LAG,CERAMI	1	SA	
FL042	3809-001206	CABLE-FLAT:30V,80C,140MM,6P,1.25MM,UL289	1	SA	
FL3A01	2702-000166	INDUCTOR-RADIAL:47uH,5%,6.0x6.4mm	1	SA	
FZ01	3601-001240	FUSE-RADIAL LEAD:50V,1A,-,5.0x4.0x5.0mm	1	SA	
FZ02	3601-001240	FUSE-RADIAL LEAD:50V,1A,-,5.0x4.0x5.0mm	1	SA	
IC1S02	0604-001028	PHOTO-COUPLER:TR,50-600%,250mW,DIP-4,ST	1	SA	
IC1S03	AC14-12006D	IC:KA431Z,TO-92,TAPING	1	SA	
IC1SS2	1203-002805	IC-PWM CONTROLLER:ICE2BS01,PDIP,8P,9.52X	1	SA	
IC301	1204-002140	IC-VIDEO PROCESS:LA71750EM-MPB-E,QFP,100	1	SA	
IC3S01	1204-001921	IC-CHROMA:LA70100M,SOP,30P,375MIL,PLASTI	1	SA	SECAM Only
IC4N01	1204-001766	IC-AUDIO PROCESSOR:MSP3407D(PQFP),POFP,4	1	SA	A2 Models Only
IC4N01	1204-001765	IC-AUDIO PROCESSOR:MSP3417D(PQFP),POFP,4	1	SA	Not used A2 Models
IC4N01	1204-001765	IC-AUDIO PROCESSOR:MSP3417D(PQFP),POFP,4	1	SA	
IC501	1204-001920	IC-AUDIO PROCESSOR:LA72646M,QFP,80P,14x1	1	SA	
IC601	AC09-00554A	IC MICOM:N128-B80-3BA,DVD-V5500/XEF-01,	1	SA	
IC604	AC14-12006C	IC:KA7533,DIP,-	1	SA	
IC605	1103-001106	IC-EEPROM:24C080,1Kx8Bit,DIP,8P,9.6x6.4mm	1	SA	
IC608	1203-000515	IC-VOL. DETECTOR:7042,TO-92,3P,177MIL,PL	1	SA	BACK-UP 1Hour Only
IC608	1203-000515	IC-VOL. DETECTOR:7042,TO-92,3P,177MIL,PLA	1	SA	SADVD-V6500/V5500 Only
IC6P01	1204-001794	IC-AUDIO PROCESSOR:LC74775NM-9808,MFP,30	1	SA	
IC701	1003-001561	IC-LED DRIVER:PT6961,SOP,32P,300MIL,-,40	1	SA	
IC802	0801-002741	IC-CMOS LOGIC:BU4053BCFV,MUX,SSOP,16P,17	1	SA	
J001	2007-000070	R-CHIP:0ohm,5%,1/10W,TP,1608	1	SA	
J03C	2007-000070	R-CHIP:0ohm,5%,1/10W,TP,1608	1	SA	
J11C	2007-000070	R-CHIP:0ohm,5%,1/10W,TP,1608	1	SA	SECAM Only
J330	2007-000070	R-CHIP:0ohm,5%,1/10W,TP,1608	1	SA	
J50A	2007-000070	R-CHIP:0ohm,5%,1/10W,TP,1608	1	SA	
J905	2007-000070	R-CHIP:0ohm,5%,1/10W,TP,1608	1	SA	
J910	2007-000029	R-CHIP:0ohm,5%,1/8W,TP,2012	1	SA	
J911	2007-000029	R-CHIP:0ohm,5%,1/8W,TP,2012	1	SA	

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
J912	2007-000070	R-CHIP:0ohm,5%,1/10W,TP,1608	1	SA	
J913	2007-000070	R-CHIP:0ohm,5%,1/10W,TP,1608	1	SA	
J914	2007-000029	R-CHIP:0ohm,5%,1/8W,TP,2012	1	SA	
JC801	3722-001573	JACK-SCART:42P/2R,SN,BLK/BLU	1	SA	
JC802	AC37-22002N	JACK-PIN:3.2mm,DPAE-9836,3P(1),HI-FI,SV	1	SA	
JK701	3722-002288	JACK-PIN:3P,SILVER,YL/WH/RD,AG	1	SA	SADVD-V6500/V5500 Only
L1P102	AC27-12001N	COIL CHOKE:10UH-15%,RA,K-30,Q80,150KHZ,-	1	SA	
L1SS01	AC29-00002A	FILTER LINE NOISE:-,30mH,-,BLF-2116	1	SA	
L1SS02	AC29-00003A	FILTER LINE NOISE:-,20mH MIN,-,-,-	1	SA	
L1SS03	AC27-12001N	COIL CHOKE:10UH-15%,RA,K-30,Q80,150KHZ,-	1	SA	
L1SS04	AC27-12001N	COIL CHOKE:10UH-15%,RA,K-30,Q80,150KHZ,-	1	SA	
L1SS05	AC27-12001N	COIL CHOKE:10UH-15%,RA,K-30,Q80,150KHZ,-	1	SA	
L301	2701-000002	INDUCTOR-AXIAL:100UH,10%,4298	1	SA	
L301A	2701-000002	INDUCTOR-AXIAL:100UH,10%,4298	1	SA	
L302	2701-000002	INDUCTOR-AXIAL:100UH,10%,4298	1	SA	
L303	2701-000002	INDUCTOR-AXIAL:100UH,10%,4298	1	SA	
L304	3301-000297	BEAD-AXIAL:25ohm,3.6x1.2x5.7mm,-,TP,-,-	1	SA	
L370	2701-000113	INDUCTOR-AXIAL:100UH,5%,2534	1	SA	
L3A01	2702-000120	INDUCTOR-RADIAL:1500uH,5%,6.2x7.4mm	1	SA	
L3A02	2701-000002	INDUCTOR-AXIAL:100UH,10%,4298	1	SA	
L3A03	2701-000002	INDUCTOR-AXIAL:100UH,10%,4298	1	SA	
L3A70	2702-000120	INDUCTOR-RADIAL:1500uH,5%,6.2x7.4mm	1	SA	
L401	AC27-12001N	COIL CHOKE:10UH-15%,RA,K-30,Q80,150KHZ,-	1	SA	
L4N01	2702-000160	INDUCTOR-RADIAL:4.7uH,10%,6.0x6.4mm	1	SA	
L4N02	2702-000106	INDUCTOR-RADIAL:100uH,10%,6.2x7.4mm	1	SA	
L4N03	2702-000160	INDUCTOR-RADIAL:4.7uH,10%,6.0x6.4mm	1	SA	
L4N04	3301-000297	BEAD-AXIAL:25ohm,3.6x1.2x5.7mm,-,TP,-,-	1	SA	
L501	2701-000002	INDUCTOR-AXIAL:100UH,10%,4298	1	SA	
L603	2701-000002	INDUCTOR-AXIAL:100UH,10%,4298	1	SA	
L605	2701-000002	INDUCTOR-AXIAL:100UH,10%,4298	1	SA	
L6P01	2701-000002	INDUCTOR-AXIAL:100UH,10%,4298	1	SA	
L6P03	2701-000160	INDUCTOR-AXIAL:22uH,5%,2434	1	SA	
L6P05	2701-000165	INDUCTOR-AXIAL:27uH,5%,2434	1	SA	
L701	2701-000002	INDUCTOR-AXIAL:100UH,10%,4298	1	SA	
L702	2701-000002	INDUCTOR-AXIAL:100UH,10%,4298	1	SA	
L803	2701-000181	INDUCTOR-AXIAL:33uH,5%,2434	1	SA	
L804	2701-000181	INDUCTOR-AXIAL:33uH,5%,2434	1	SA	
L805	2701-000181	INDUCTOR-AXIAL:33uH,5%,2434	1	SA	
L806	2701-000181	INDUCTOR-AXIAL:33uH,5%,2434	1	SA	
L807	2701-000181	INDUCTOR-AXIAL:33uH,5%,2434	1	SA	
L808	2701-000181	INDUCTOR-AXIAL:33uH,5%,2434	1	SA	
L809	2701-000181	INDUCTOR-AXIAL:33uH,5%,2434	1	SA	
L810	2701-000181	INDUCTOR-AXIAL:33uH,5%,2434	1	SA	
L811	2701-000181	INDUCTOR-AXIAL:33uH,5%,2434	1	SA	
L812	2701-000181	INDUCTOR-AXIAL:33uH,5%,2434	1	SA	
L814	AC27-92001M	COIL-INDUCTOR:RH3.5X6.5RS,BEAD(RADIAL),-	1	SA	
L890	2701-000002	INDUCTOR-AXIAL:100UH,10%,4298	1	SA	
P021	AK61-00308A	CONNECTOR-BOARD VCR:SV-DVD440,HIPS 94HB,	1	SA	
PT1S01	AC26-00012J	TRANS SWITCHING:EER-3126,SLV-D950E,-,-,-	1	SA	
PT601	0604-001275	PHOTO-INTERRUPTER:-,0MMW,SNAP(STOPPER),	1	SA	
PT602	0604-001275	PHOTO-INTERRUPTER:-,0MMW,SNAP(STOPPER),	1	SA	
Q1P101	0501-000362	TR-SMALL SIGNAL:KSC2328A-Y,NPN,1000MW,TO	1	SA	
Q1P102	0504-000142	TR-DIGITAL:KSR2001,PNP,300MW,4.7K/4.7K,T	1	SA	
Q1P103	0501-000398	TR-SMALL SIGNAL:KSC945,NPN,250mW,TO-92,T	1	SA	

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark	Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
Q1P104	0501-000362	TR-SMALL SIGNAL:KSC2328A-Y,NPN,1000MW,TO	1	SA		R1SS08	2001-000793	R-CARBON:470HM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
Q1P105	0501-000362	TR-SMALL SIGNAL:KSC2328A-Y,NPN,1000MW,TO	1	SA		R1SS31	2001-000780	R-CARBON:470HM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
Q1P106	0501-000362	TR-SMALL SIGNAL:KSC2328A-Y,NPN,1000MW,TO	1	SA		R1SS32	2001-000429	R-CARBON:1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
Q1P107	0501-000362	TR-SMALL SIGNAL:KSC2328A-Y,NPN,1000MW,TO	1	SA		R1SS33	2001-000429	R-CARBON:1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
Q1P108	0504-000142	TR-DIGITAL:KSR2001,PNP,300MW,4.7K/4.7K,T	1	SA		R1SS34	2004-000869	R-METAL:3Kohm,1%,1/8W,AA,TP,1.8x3.2mm	1	SA	
Q1P109	0501-000398	TR-SMALL SIGNAL:KSC945,NPN,250mW,TO-92,T	1	SA		R1SS35	2004-000459	R-METAL:2.2Kohm,1%,1/8W,AA,TP,1.8x3.2m	1	SA	
Q1P110	0501-000362	TR-SMALL SIGNAL:KSC2328A-Y,NPN,1000MW,TO	1	SA		R315	2007-000122	R-CHIP:1.2Kohm,5%,1/10W,TP,1608	1	SA	
Q1P111	0501-000362	TR-SMALL SIGNAL:KSC2328A-Y,NPN,1000MW,TO	1	SA		R316	2007-001179	R-CHIP:8.2Kohm,5%,1/10W,TP,1608	1	SA	
Q302	0501-000341	TR-SMALL SIGNAL:KSC1623-L,NPN,200mW,SOT-	1	SA	SECAM Only	R320	2007-000458	R-CHIP:18Kohm,5%,1/10W,TP,1608	1	SA	
Q351	0501-000002	TR-SMALL SIGNAL:KSA812,PNP,150MW,SOT-23,	1	SA		R321	2007-000090	R-CHIP:10Kohm,5%,1/10W,TP,1608	1	SA	
Q3A01	0501-000398	TR-SMALL SIGNAL:KSC945,NPN,250mW,TO-92,T	1	SA		R322	2007-000458	R-CHIP:18Kohm,5%,1/10W,TP,1608	1	SA	
Q3A02	0501-000303	TR-SMALL SIGNAL:KSA733,PNP,250mW,TO-92,T	1	SA		R323	2007-000125	R-CHIP:3.9Kohm,5%,1/10W,TP,1608	1	SA	
Q3A03	0501-000442	TR-SMALL SIGNAL:KTC3203-Y,NPN,400mW,TO-9	1	SA		R324	2007-000079	R-CHIP:1.8Kohm,5%,1/10W,TP,1608	1	SA	SECAM Only
Q3A04	0501-000442	TR-SMALL SIGNAL:KTC3203-Y,NPN,400mW,TO-9	1	SA		R325	2001-000281	R-CARBON:100OHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
Q3A05	0501-000442	TR-SMALL SIGNAL:KTC3203-Y,NPN,400mW,TO-9	1	SA		R326	2001-000281	R-CARBON:100OHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
Q3A06	0501-000002	TR-SMALL SIGNAL:KSA812,PNP,150MW,SOT-23,	1	SA		R327	2007-000084	R-CHIP:4.7Kohm,5%,1/10W,TP,1608	1	SA	
Q401	0501-000002	TR-SMALL SIGNAL:KSA812,PNP,150MW,SOT-23,	1	SA	Not used SECAM	R328	2007-000122	R-CHIP:1.2Kohm,5%,1/10W,TP,1608	1	SA	
Q401	0501-000002	TR-SMALL SIGNAL:KSA812,PNP,150MW,SOT-23,	1	SA		R329	2007-000081	R-CHIP:2.7Kohm,5%,1/10W,TP,1608	1	SA	
Q601	0504-000129	TR-DIGITAL:KSR1104,NPN,200mW,47K/47K,SOT	1	SA		R330	2007-000087	R-CHIP:6.8Kohm,5%,1/10W,TP,1608	1	SA	
Q6P01	0501-000303	TR-SMALL SIGNAL:KSA733,PNP,250mW,TO-92,T	1	SA		R331	2007-000079	R-CHIP:1.8Kohm,5%,1/10W,TP,1608	1	SA	
Q6P02	0501-000303	TR-SMALL SIGNAL:KSA733,PNP,250mW,TO-92,T	1	SA		R333	2007-001039	R-CHIP:56Kohm,5%,1/8W,TP,2012	1	SA	
Q6P04	0501-000398	TR-SMALL SIGNAL:KSC945,NPN,250mW,TO-92,T	1	SA		R334	2007-000123	R-CHIP:1.5Kohm,5%,1/10W,TP,1608	1	SA	
Q802	0504-000119	TR-DIGITAL:KSR1004,NPN,300MW,47K/47K,TO-	1	SA		R335	2001-000281	R-CARBON:100OHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
Q803	0504-000129	TR-DIGITAL:KSR1104,NPN,200mW,47K/47K,SOT	1	SA		R350	2007-000123	R-CHIP:1.5Kohm,5%,1/10W,TP,1608	1	SA	SECAM Only
Q804	0504-000142	TR-DIGITAL:KSR2001,PNP,300MW,4.7K/4.7K,T	1	SA		R360	2007-001196	R-CHIP:820Kohm,5%,1/10W,TP,1608	1	SA	
Q806	0504-000152	TR-DIGITAL:KSR2101,PNP,200mW,4.7K/4.7K,S	1	SA		R371	2007-000119	R-CHIP:560ohm,5%,1/10W,TP,1608	1	SA	
Q808	0504-000119	TR-DIGITAL:KSR1004,NPN,300MW,47K/47K,TO-	1	SA		R372	2007-000078	R-CHIP:1Kohm,5%,1/10W,TP,1608	1	SA	
Q809	0501-000341	TR-SMALL SIGNAL:KSC1623-L,NPN,200mW,SOT-	1	SA		R373	2007-000093	R-CHIP:20Kohm,5%,1/10W,TP,1608	1	SA	
Q810	0501-000341	TR-SMALL SIGNAL:KSC1623-L,NPN,200mW,SOT-	1	SA		R380	2007-000124	R-CHIP:2.2Kohm,5%,1/10W,TP,1608	1	SA	
Q811	0501-000341	TR-SMALL SIGNAL:KSC1623-L,NPN,200mW,SOT-	1	SA		R3A01	2007-000090	R-CHIP:10Kohm,5%,1/10W,TP,1608	1	SA	
Q891A	0501-000398	TR-SMALL SIGNAL:KSC945,NPN,250mW,TO-92,T	1	SA	Not used SECAM	R3A04	2001-000221	R-CARBON:1.2KOHM,5%,1/8W,AA,TP,1.8X3.2M	1	SA	
Q891A	0501-000398	TR-SMALL SIGNAL:KSC945,NPN,250mW,TO-92,T	1	SA		R3A05	2007-000616	R-CHIP:24Kohm,5%,1/10W,TP,1608	1	SA	
Q891B	0501-000398	TR-SMALL SIGNAL:KSC945,NPN,250mW,TO-92,T	1	SA	Not used SECAM	R3A06	2007-000539	R-CHIP:200ohm,5%,1/10W,TP,1608	1	SA	
Q891B	0501-000398	TR-SMALL SIGNAL:KSC945,NPN,250mW,TO-92,T	1	SA		R3A07	2007-000133	R-CHIP:330Kohm,5%,1/10W,TP,1608	1	SA	
R1P101	2001-000855	R-CARBON:560OHM,5%,1/4W,AA,TP,2.4X6.4MM	1	SA		R3A08	2007-000091	R-CHIP:12Kohm,5%,1/10W,TP,1608	1	SA	
R1P103	2007-000402	R-CHIP:150ohm,5%,1/10W,TP,1608	1	SA		R3A09	2007-000070	R-CHIP:0ohm,5%,1/10W,TP,1608	1	SA	
R1P104	2001-000449	R-CARBON:2.2KOHM,5%,1/8W,AA,TP,1.8X3.2M	1	SA		R3A11	2007-000124	R-CHIP:2.2Kohm,5%,1/10W,TP,1608	1	SA	
R1P105	2001-000969	R-CARBON:750HM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA		R3A12	2007-000074	R-CHIP:100ohm,5%,1/10W,TP,1608	1	SA	
R1P109	2001-000362	R-CARBON:150OHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA		R3A13	2007-000097	R-CHIP:47Kohm,5%,1/10W,TP,1608	1	SA	
R1P10B	2007-000090	R-CHIP:10Kohm,5%,1/10W,TP,1608	1	SA		R3A14	2007-000094	R-CHIP:22Kohm,5%,1/10W,TP,1608	1	SA	
R1P110	2001-000449	R-CARBON:2.2KOHM,5%,1/8W,AA,TP,1.8X3.2M	1	SA		R3A16	2007-000090	R-CHIP:10Kohm,5%,1/10W,TP,1608	1	SA	
R1P111	2001-000062	R-CARBON:470OHM,5%,1/4W,AA,TP,2.4X6.4MM	1	SA		R3A17	2007-000124	R-CHIP:2.2Kohm,5%,1/10W,TP,1608	1	SA	
R1P112	2001-000302	R-CARBON:100HM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA		R3A18	2007-000124	R-CHIP:2.2Kohm,5%,1/10W,TP,1608	1	SA	
R1P122	2007-000134	R-CHIP:33Kohm,5%,1/10W,TP,1608	1	SA		R3A23	2007-000091	R-CHIP:12Kohm,5%,1/10W,TP,1608	1	SA	
R1SD11	2006-000273	R-CEMENT:27KOHM,5%,2W,CA,BK,6.4X6.5X18M	1	SA		R3A24	2007-000094	R-CHIP:22Kohm,5%,1/10W,TP,1608	1	SA	
R1SD13	2006-000273	R-CEMENT:27KOHM,5%,2W,CA,BK,6.4X6.5X18M	1	SA		R3A25	2001-000221	R-CARBON:1.2KOHM,5%,1/8W,AA,TP,1.8X3.2M	1	SA	
R1SD14	2001-000598	R-CARBON:3.30HM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA		R3A26	2007-000090	R-CHIP:10Kohm,5%,1/10W,TP,1608	1	SA	
R1SF05	2001-000527	R-CARBON:220HM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA		R3A28	2007-000124	R-CHIP:2.2Kohm,5%,1/10W,TP,1608	1	SA	
R1SF06	2004-000459	R-METAL:2.2Kohm,1%,1/8W,AA,TP,1.8x3.2m	1	SA		R3A50	2001-000800	R-CARBON:5.1KOHM,5%,1/8W,AA,TP,1.8X3.2M	1	SA	
R1SF07	2003-000105	R-METAL OXIDE:0.33ohm,5%,2W,AD,TP,6x16mm	1	SA		R3A51	2007-000090	R-CHIP:10Kohm,5%,1/10W,TP,1608	1	SA	
R1SQ11	2001-000281	R-CARBON:100OHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA		R3A60	2007-000704	R-CHIP:3.6Kohm,5%,1/10W,TP,1608	1	SA	
R1SR01	2001-000548	R-CARBON:270KOHM,5%,1/8W,AA,TP,1.8X3.2M	1	SA		R3A70	2007-000084	R-CHIP:4.7Kohm,5%,1/10W,TP,1608	1	SA	
R1SR02	2001-000548	R-CARBON:270KOHM,5%,1/8W,AA,TP,1.8X3.2M	1	SA		R3S01	2007-000078	R-CHIP:1Kohm,5%,1/10W,TP,1608	1	SA	SECAM Only
R1SR03	2001-000548	R-CARBON:270KOHM,5%,1/8W,AA,TP,1.8X3.2M	1	SA		R3S02	2001-000435	R-CARBON:1MOHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	SECAM Only
R1SS01	2006-000262	R-CEMENT:2.7ohm,10%,2W,CB,TP,7.5x11x20.	1	SA		R401	2001-000786	R-CARBON:47KOHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	Not used SECAM

Electrical Parts List

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
R401	2001-000786	R-CARBON:47KOHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
R402	2001-000290	R-CARBON:10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	Not used SECAM
R402	2001-000290	R-CARBON:10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
R403	2001-000281	R-CARBON:100OHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
R404	2001-000281	R-CARBON:100OHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
R406	2007-001010	R-CHIP:51Kohm,5%,1/10W,TP,1608	1	SA	Not used SECAM
R406	2007-001010	R-CHIP:51Kohm,5%,1/10W,TP,1608	1	SA	
R408	2007-000122	R-CHIP:1.2Kohm,5%,1/10W,TP,1608	1	SA	Not used SECAM
R408	2007-000122	R-CHIP:1.2Kohm,5%,1/10W,TP,1608	1	SA	
R440	2001-000362	R-CARBON:150OHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	Not used SECAM
R440	2001-000362	R-CARBON:150OHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
R441	2007-000116	R-CHIP:120ohm,5%,1/10W,TP,1608	1	SA	Not used SECAM
R441	2007-000116	R-CHIP:120ohm,5%,1/10W,TP,1608	1	SA	
R4N01	2007-000078	R-CHIP:1Kohm,5%,1/10W,TP,1608	1	SA	
R4N02	2001-000281	R-CARBON:100OHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
R4N03	2001-000281	R-CARBON:100OHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
R4N04	2001-000563	R-CARBON:27KOHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
R4N05	2007-000074	R-CHIP:100ohm,5%,1/10W,TP,1608	1	SA	
R4N06	2007-000074	R-CHIP:100ohm,5%,1/10W,TP,1608	1	SA	
R501	2001-000766	R-CARBON:43KOHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
R502	2007-001056	R-CHIP:6.2Kohm,5%,1/10W,TP,1608	1	SA	
R503	2001-000780	R-CARBON:470OHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
R505	2001-000766	R-CARBON:43KOHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
R506	2007-001056	R-CHIP:6.2Kohm,5%,1/10W,TP,1608	1	SA	
R507	2001-000766	R-CARBON:43KOHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
R508	2007-001056	R-CHIP:6.2Kohm,5%,1/10W,TP,1608	1	SA	
R509	2007-000087	R-CHIP:6.8Kohm,5%,1/10W,TP,1608	1	SA	
R510	2007-000913	R-CHIP:43Kohm,5%,1/10W,TP,1608	1	SA	
R511	2007-000090	R-CHIP:10Kohm,5%,1/10W,TP,1608	1	SA	
R512	2001-000660	R-CARBON:33KOHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
R517	2007-000087	R-CHIP:6.8Kohm,5%,1/10W,TP,1608	1	SA	
R518	2007-000913	R-CHIP:43Kohm,5%,1/10W,TP,1608	1	SA	
R519	2007-001056	R-CHIP:6.2Kohm,5%,1/10W,TP,1608	1	SA	
R520	2001-000766	R-CARBON:43KOHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
R521	2007-000087	R-CHIP:6.8Kohm,5%,1/10W,TP,1608	1	SA	
R522	2007-001071	R-CHIP:6.8Kohm,5%,1/8W,TP,2012	1	SA	
R533	2007-000003	R-CHIP:43Kohm,5%,1/8W,TP,2012	1	SA	
R540	2001-000766	R-CARBON:43KOHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
R545	2007-000512	R-CHIP:2.4Kohm,5%,1/10W,TP,1608	1	SA	
R546	2007-000078	R-CHIP:1Kohm,5%,1/10W,TP,1608	1	SA	
R547	2007-000078	R-CHIP:1Kohm,5%,1/10W,TP,1608	1	SA	
R550	2001-000766	R-CARBON:43KOHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
R551	2007-000093	R-CHIP:20Kohm,5%,1/10W,TP,1608	1	SA	
R552	2007-000913	R-CHIP:43Kohm,5%,1/10W,TP,1608	1	SA	
R553	2007-000093	R-CHIP:20Kohm,5%,1/10W,TP,1608	1	SA	
R570	2007-000078	R-CHIP:1Kohm,5%,1/10W,TP,1608	1	SA	
R571	2007-000098	R-CHIP:56Kohm,5%,1/10W,TP,1608	1	SA	
R608	2001-000864	R-CARBON:56KOHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
R609	2001-000864	R-CARBON:56KOHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
R610	2001-000281	R-CARBON:100OHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
R611	2001-000281	R-CARBON:100OHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
R613	2007-000078	R-CHIP:1Kohm,5%,1/10W,TP,1608	1	SA	BACK-UP 1Hour Only
R613	2007-000078	R-CHIP:1Kohm,5%,1/10W,TP,1608	1	SA	SADVD-V6500/V5500 Only
R614	2001-000429	R-CARBON:1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	

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R615	2001-000429	R-CARBON:1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
R617	2001-000864	R-CARBON:56KOHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
R620	2007-000090	R-CHIP:10Kohm,5%,1/10W,TP,1608	1	SA	
R622	2007-000090	R-CHIP:10Kohm,5%,1/10W,TP,1608	1	SA	
R630	2007-000090	R-CHIP:10Kohm,5%,1/10W,TP,1608	1	SA	
R631	2007-000078	R-CHIP:1Kohm,5%,1/10W,TP,1608	1	SA	
R632	2001-000429	R-CARBON:1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
R633	2001-000429	R-CARBON:1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
R634	2007-000084	R-CHIP:4.7Kohm,5%,1/10W,TP,1608	1	SA	
R635	2007-000084	R-CHIP:4.7Kohm,5%,1/10W,TP,1608	1	SA	
R636	2001-000281	R-CARBON:100OHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
R637	2007-000096	R-CHIP:30Kohm,5%,1/10W,TP,1608	1	SA	
R640	2007-000090	R-CHIP:10Kohm,5%,1/10W,TP,1608	1	SA	
R641	2001-000780	R-CARBON:470OHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
R642	2001-000780	R-CARBON:470OHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
R644	2007-000078	R-CHIP:1Kohm,5%,1/10W,TP,1608	1	SA	
R647	2001-000429	R-CARBON:1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
R651	2001-000010	R-CARBON:68KOHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
R652	2001-000568	R-CARBON:27OHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	BACK-UP 1Hour Only
R652	2001-000568	R-CARBON:27OHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	SADVD-V6500/V5500 Only
R657	2007-000100	R-CHIP:68Kohm,5%,1/10W,TP,1608	1	SA	BACK-UP 1Hour Only
R657	2007-000070	R-CHIP:0ohm,5%,1/10W,TP,1608	1	SA	Not used BACK-UP 1Hour Only
R657	2007-000100	R-CHIP:68Kohm,5%,1/10W,TP,1608	1	SA	SADVD-V6500/V5500 Only
R657	2007-000070	R-CHIP:0ohm,5%,1/10W,TP,1608	1	SA	Not used DVD-V6500/V5500
R660	2001-000786	R-CARBON:47KOHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
R661	2001-000660	R-CARBON:33KOHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
R666	2007-000084	R-CHIP:4.7Kohm,5%,1/10W,TP,1608	1	SA	
R667	2007-000084	R-CHIP:4.7Kohm,5%,1/10W,TP,1608	1	SA	
R668	2001-000780	R-CARBON:470OHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
R669	2001-000780	R-CARBON:470OHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
R670	2007-000084	R-CHIP:4.7Kohm,5%,1/10W,TP,1608	1	SA	
R671	2001-000734	R-CARBON:4.7KOHM,5%,1/8W,AA,TP,1.8X3.2M	1	SA	
R672	2001-000734	R-CARBON:4.7KOHM,5%,1/8W,AA,TP,1.8X3.2M	1	SA	
R673	2001-000429	R-CARBON:1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
R674	2007-000090	R-CHIP:10Kohm,5%,1/10W,TP,1608	1	SA	
R678	2007-000094	R-CHIP:22Kohm,5%,1/10W,TP,1608	1	SA	
R679	2007-000075	R-CHIP:220ohm,5%,1/10W,TP,1608	1	SA	
R682	2007-000094	R-CHIP:22Kohm,5%,1/10W,TP,1608	1	SA	
R685	2001-000812	R-CARBON:5.6KOHM,5%,1/8W,AA,TP,1.8X3.2M	1	SA	
R688	2007-000129	R-CHIP:27Kohm,5%,1/10W,TP,1608	1	SA	
R691	2007-000075	R-CHIP:220ohm,5%,1/10W,TP,1608	1	SA	
R693	2007-000097	R-CHIP:47Kohm,5%,1/10W,TP,1608	1	SA	
R694	2007-000097	R-CHIP:47Kohm,5%,1/10W,TP,1608	1	SA	
R698	2001-000290	R-CARBON:10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
R6P01	2001-000281	R-CARBON:100OHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
R6P02	2001-000281	R-CARBON:100OHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
R6P03	2007-000081	R-CHIP:2.7Kohm,5%,1/10W,TP,1608	1	SA	
R6P04	2007-000090	R-CHIP:10Kohm,5%,1/10W,TP,1608	1	SA	
R6P05	2007-000090	R-CHIP:10Kohm,5%,1/10W,TP,1608	1	SA	
R6P06	2007-000086	R-CHIP:5.6Kohm,5%,1/10W,TP,1608	1	SA	

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R6P07	2007-000075	R-CHIP:220ohm,5%,1/10W,TP,1608	1	SA	
R6P08	2001-000005	R-CARBON:390ohm,5%,1/8W,AA,TP,1.8x3.2mm	1	SA	
R6P09	2007-000070	R-CHIP:0ohm,5%,1/10W,TP,1608	1	SA	
R6P10	2001-000515	R-CARBON:220OHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
R6P12	2001-000734	R-CARBON:4.7KOHM,5%,1/8W,AA,TP,1.8X3.2M	1	SA	
R6P13	2007-000097	R-CHIP:47Kohm,5%,1/10W,TP,1608	1	SA	
R6P14	2007-000123	R-CHIP:1.5Kohm,5%,1/10W,TP,1608	1	SA	
R701	2001-000429	R-CARBON:1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
R702	2007-000078	R-CHIP:1Kohm,5%,1/10W,TP,1608	1	SA	
R703	2007-000078	R-CHIP:1Kohm,5%,1/10W,TP,1608	1	SA	
R704	2001-000837	R-CARBON:51KOHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
R711	2007-000090	R-CHIP:10Kohm,5%,1/10W,TP,1608	1	SA	
R712	2007-001167	R-CHIP:75ohm,5%,1/10W,TP,1608	1	SA	
R801A	2007-000116	R-CHIP:120ohm,5%,1/10W,TP,1608	1	SA	
R802	2007-000079	R-CHIP:1.8Kohm,5%,1/10W,TP,1608	1	SA	
R803	2007-000079	R-CHIP:1.8Kohm,5%,1/10W,TP,1608	1	SA	
R805	2007-000643	R-CHIP:270ohm,5%,1/10W,TP,1608	1	SA	
R806	2007-000643	R-CHIP:270ohm,5%,1/10W,TP,1608	1	SA	
R807	2007-001134	R-CHIP:68ohm,5%,1/10W,TP,1608	1	SA	
R808	2007-001167	R-CHIP:75ohm,5%,1/10W,TP,1608	1	SA	
R809	2007-001167	R-CHIP:75ohm,5%,1/10W,TP,1608	1	SA	
R810	2007-000643	R-CHIP:270ohm,5%,1/10W,TP,1608	1	SA	
R811	2007-000643	R-CHIP:270ohm,5%,1/10W,TP,1608	1	SA	
R813	2007-000643	R-CHIP:270ohm,5%,1/10W,TP,1608	1	SA	
R814	2007-000643	R-CHIP:270ohm,5%,1/10W,TP,1608	1	SA	
R815	2007-000643	R-CHIP:270ohm,5%,1/10W,TP,1608	1	SA	
R816	2007-000643	R-CHIP:270ohm,5%,1/10W,TP,1608	1	SA	
R819	2007-000643	R-CHIP:270ohm,5%,1/10W,TP,1608	1	SA	
R820	2007-000643	R-CHIP:270ohm,5%,1/10W,TP,1608	1	SA	
R821	2007-000134	R-CHIP:33Kohm,5%,1/10W,TP,1608	1	SA	
R822	2007-000094	R-CHIP:22Kohm,5%,1/10W,TP,1608	1	SA	
R822B	2007-001167	R-CHIP:75ohm,5%,1/10W,TP,1608	1	SA	
R825	2007-000084	R-CHIP:4.7Kohm,5%,1/10W,TP,1608	1	SA	
R827	2007-000101	R-CHIP:82Kohm,5%,1/10W,TP,1608	1	SA	
R828	2007-000101	R-CHIP:82Kohm,5%,1/10W,TP,1608	1	SA	
R829	2007-000101	R-CHIP:82Kohm,5%,1/10W,TP,1608	1	SA	
R830	2007-000101	R-CHIP:82Kohm,5%,1/10W,TP,1608	1	SA	
R835	2007-000101	R-CHIP:82Kohm,5%,1/10W,TP,1608	1	SA	
R836	2007-000101	R-CHIP:82Kohm,5%,1/10W,TP,1608	1	SA	
R839	2007-000070	R-CHIP:0ohm,5%,1/10W,TP,1608	1	SA	
R841	2007-000119	R-CHIP:560ohm,5%,1/10W,TP,1608	1	SA	
R842	2007-000119	R-CHIP:560ohm,5%,1/10W,TP,1608	1	SA	
R843	2007-000119	R-CHIP:560ohm,5%,1/10W,TP,1608	1	SA	
R844	2007-001167	R-CHIP:75ohm,5%,1/10W,TP,1608	1	SA	
R851	2007-000097	R-CHIP:47Kohm,5%,1/10W,TP,1608	1	SA	
R852	2007-000097	R-CHIP:47Kohm,5%,1/10W,TP,1608	1	SA	
R890	2007-000090	R-CHIP:10Kohm,5%,1/10W,TP,1608	1	SA	
R891A	2007-000090	R-CHIP:10Kohm,5%,1/10W,TP,1608	1	SA	Not used SECAM
R891A	2007-000090	R-CHIP:10Kohm,5%,1/10W,TP,1608	1	SA	
R891B	2007-000090	R-CHIP:10Kohm,5%,1/10W,TP,1608	1	SA	Not used SECAM
R891B	2007-000090	R-CHIP:10Kohm,5%,1/10W,TP,1608	1	SA	
R892A	2007-001179	R-CHIP:8.2Kohm,5%,1/10W,TP,1608	1	SA	Not used SECAM
R892A	2007-001179	R-CHIP:8.2Kohm,5%,1/10W,TP,1608	1	SA	
R892B	2007-001179	R-CHIP:8.2Kohm,5%,1/10W,TP,1608	1	SA	Not used SECAM
R892B	2007-001179	R-CHIP:8.2Kohm,5%,1/10W,TP,1608	1	SA	

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
R893A	2007-000122	R-CHIP:1.2Kohm,5%,1/10W,TP,1608	1	SA	Not used SECAM
R893A	2007-000122	R-CHIP:1.2Kohm,5%,1/10W,TP,1608	1	SA	
R893B	2007-000122	R-CHIP:1.2Kohm,5%,1/10W,TP,1608	1	SA	Not used SECAM
R893B	2007-000122	R-CHIP:1.2Kohm,5%,1/10W,TP,1608	1	SA	
R894A	2007-000129	R-CHIP:27Kohm,5%,1/10W,TP,1608	1	SA	Not used SECAM
R894A	2007-000129	R-CHIP:27Kohm,5%,1/10W,TP,1608	1	SA	
R894B	2007-000129	R-CHIP:27Kohm,5%,1/10W,TP,1608	1	SA	Not used SECAM
R894B	2007-000129	R-CHIP:27Kohm,5%,1/10W,TP,1608	1	SA	
RM701	AC32-00006A	MODULE REMOCON:TSOP2238WE1,38KHZ,-5.08m	1	SA	
SCS11A	0505-001729	FET-SILICON:SPA04N60C3,N,600V,4.5A,0.850	1	SA	
SW601	AC34-00005A	SWITCH MODE:-----	1	SA	
SW602	AC34-00006A	SWITCH-REC:-----	1	SA	
SW604	3409-001165	SWITCH-DETECTOR:5V,1mA,-50gf,ON-OFF	1	SA	
SW701	3404-001182	SWITCH-TACT-DC12V,50MA,100GF,6.0X6.0X5.0	1	SA	
SW702	3404-001182	SWITCH-TACT-DC12V,50MA,100GF,6.0X6.0X5.0	1	SA	
SW703	3404-001182	SWITCH-TACT-DC12V,50MA,100GF,6.0X6.0X5.0	1	SA	
SW704	3404-001182	SWITCH-TACT-DC12V,50MA,100GF,6.0X6.0X5.0	1	SA	
SW705	3404-001182	SWITCH-TACT-DC12V,50MA,100GF,6.0X6.0X5.0	1	SA	
TM401	AC40-00038A	TM BLOCK-SECAM/L/L- PAL-B/G:TCPL0601PD20	1	SA	SECAM Only
TM401	AC40-00039A	TM BLOCK-PAL G I K:TCMK0601PD20AA,PAL B/	1	SA	Not used SECAM
TM401	AC40-00039A	TM BLOCK-PAL G I K:TCMK0601PD20AA,PAL B/	1	SA	
W177	2001-000429	R-CARBON:1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
W178	2001-000429	R-CARBON:1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
W205	2001-000281	R-CARBON:100OHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
W206	2001-000281	R-CARBON:100OHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
W404	2001-000780	R-CARBON:470OHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
W668	2007-000070	R-CHIP:0ohm,5%,1/10W,TP,1608	1	SA	Not used SECAM
W668	2007-000070	R-CHIP:0ohm,5%,1/10W,TP,1608	1	SA	
W735	2202-002037	C-CERAMIC,MLC-AXIAL:100nf,80-20%,50V,Y5V	1	SA	
W737	2202-002037	C-CERAMIC,MLC-AXIAL:100nf,80-20%,50V,Y5V	1	SA	
XT301	2801-001397	CRYSTAL-UNIT:4.433619MHz,20ppm,28-AAA,S,	1	SA	
XT4N01	2801-004096	CRYSTAL-UNIT:18.432MHZ,20PPM,28-AAA,16PF	1	SA	
XT601	2801-003318	CRYSTAL-UNIT:32.768KHz,20ppm,28-AAP,12.5	1	SA	BACK-UP 1Hour Only
XT601	2801-003318	CRYSTAL-UNIT:32.768KHz,20ppm,28-AAP,12.5p	1	SA	SA DVD-V6500/V5500 Only
XT602	2801-003139	CRYSTAL-UNIT:8MHz,50ppm,28-AAA,22pf,80oh	1	SA	
ZD1P02	0403-001211	DIODE-ZENER:MTZJ12B,11.8-12.3V,500MW,DO-	1	SA	
ZD1P03	0403-000720	DIODE-ZENER:MTZJ9.1B,8.57-9.01V,500MW,DO	1	SA	
ZD1P04	0403-000717	DIODE-ZENER:MTZJ5.1B,4.94-5.2V,500MW,DO-	1	SA	
ZD1P05	0403-001211	DIODE-ZENER:MTZJ12B,11.8-12.3V,500MW,DO-	1	SA	
ZD1P06	0403-000717	DIODE-ZENER:MTZJ5.1B,4.94-5.2V,500MW,DO-	1	SA	
ZD1SS1	0403-000713	DIODE-ZENER:MTZJ20B,18.63-17.7V,500MW,DO	1	SA	
ZD1SS2	0403-001318	DIODE-ZENER:MTZJ4.3B,4.17-4.43V,500MW,DO	1	SA	
ZD401	0403-000390	DIODE-ZENER:UZP33B,31.4-34.6V,1000MW,DO-	1	SA	
ZD701	0403-000720	DIODE-ZENER:MTZJ9.1B,8.57-9.01V,500MW,DO	1	SA	
ZD801	0403-000297	DIODE-ZENER:MTZ6.2B,5.96-6.27V,500mW,DO-	1	SA	
ZD805	0403-001211	DIODE-ZENER:MTZJ12B,11.8-12.3V,500MW,DO-	1	SA	
ZD806	0403-001083	DIODE-ZENER:UDZ9.1B,8.85-9.23V,200MW,UMD	1	SA	
ZD807	0403-001083	DIODE-ZENER:UDZ9.1B,8.85-9.23V,200MW,UMD	1	SA	
ZD809	0403-001083	DIODE-ZENER:UDZ9.1B,8.85-9.23V,200MW,UMD	1	SA	
ZD810	0403-001083	DIODE-ZENER:UDZ9.1B,8.85-9.23V,200MW,UMD	1	SA	
ZD811	0403-000720	DIODE-ZENER:MTZJ9.1B,8.57-9.01V,500MW,DO	1	SA	
ZD851	0403-000720	DIODE-ZENER:MTZJ9.1B,8.57-9.01V,500MW,DO	1	SA	
ZD852	0403-000720	DIODE-ZENER:MTZJ9.1B,8.57-9.01V,500MW,DO	1	SA	
ZD853	0403-000720	DIODE-ZENER:MTZJ9.1B,8.57-9.01V,500MW,DO	1	SA	

Electrical Parts List

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
ZD854	0403-000720	DIODE-ZENER:MTZJ9.1B,8.57-9.01V,500MW,DO	1	SA	
ZD863	0403-001083	DIODE-ZENER:UDZ9.1B,8.85-9.23V,200MW,UMD	1	SA	
ZD864	0403-000720	DIODE-ZENER:MTZJ9.1B,8.57-9.01V,500MW,DO	1	SA	
P002	AK92-00609B	ASSY PCB-DVD MAIN:DVD-V6500/XEF,Mpeg,Cox,	1	SA	DVD-
	AK92-00609A	ASSY PCB-DVD MAIN:DVD-V5500/XEF,w/o Mpeg	1	SA	V64XX/V6500 Only Other Only
AC14	2203-001607	C-CER,CHIP:0.22nF,5%,50V,NP0,-,1608	1	SA	
AC15	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
AC18	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
AC19	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
AC20	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
AC21	2203-000315	C-CER,CHIP:0.12nF,5%,50V,COG,TP,1608	1	SA	
AC22	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
AC25	2203-000315	C-CER,CHIP:0.12nF,5%,50V,COG,TP,1608	1	SA	
AC26	2203-000125	C-CER,CHIP:1.2nF,10%,50V,X7R,TP,1608,-	1	SA	
AC27	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
AC4	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
AC5	2203-000125	C-CER,CHIP:1.2nF,10%,50V,X7R,TP,1608,-	1	SA	
AC9	2203-001607	C-CER,CHIP:0.22nF,5%,50V,NP0,-,1608	1	SA	
ACC1	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
ACC2	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
AD1	0407-000114	DIODE-ARRAY:DAN202K,80V,100mA,CA2-3,SOT-	1	SA	
AD2	0407-000114	DIODE-ARRAY:DAN202K,80V,100mA,CA2-3,SOT-	1	SA	
AD40	0407-000116	DIODE-ARRAY:DAP202K,80V,100mA,CK2-3,SOT-	1	SA	
AE10	2401-002165	C-AL:100uF,20%,16V,GP,TP,6.3x7.5	1	SA	
AE11	2401-000922	C-AL:22uF,20%,16V,GP,TP,5x5.5	1	SA	
AE13	2401-000922	C-AL:22uF,20%,16V,GP,TP,5x5.5	1	SA	
AE14	2401-003107	C-AL:47uF,20%,16V,GP,TP,5x7.5	1	SA	
AE3	2401-000922	C-AL:22uF,20%,16V,GP,TP,5x5.5	1	SA	
AE4	2401-003107	C-AL:47uF,20%,16V,GP,TP,5x7.5	1	SA	
AE5	2401-000922	C-AL:22uF,20%,16V,GP,TP,5x5.5	1	SA	
AE8	2401-002165	C-AL:100uF,20%,16V,GP,TP,6.3x7.5	1	SA	
AE9	2401-002165	C-AL:100uF,20%,16V,GP,TP,6.3x7.5	1	SA	
AE1	2401-000922	C-AL:22uF,20%,16V,GP,TP,5x5.5	1	SA	
AE2	2401-000922	C-AL:22uF,20%,16V,GP,TP,5x5.5	1	SA	
AE50	2401-000922	C-AL:22uF,20%,16V,GP,TP,5x5.5	1	SA	
AE51	2401-000922	C-AL:22uF,20%,16V,GP,TP,5x5.5	1	SA	
AIC2	1002-001294	IC-D/A CONVERTER:PCM1742KE,24BIT,TSSOP,1	1	SA	
AIC4	1201-000163	IC-OP AMP:4560,SOP8P,173MIL,DUAL,100V/m	1	SA	
AIC5	1201-000163	IC-OP AMP:4560,SOP8P,173MIL,DUAL,100V/m	1	SA	
AL1	3301-001419	BEAD-SMD:-,220,-,500,TP,-,0.3	1	SA	
AL2	3301-001419	BEAD-SMD:-,220,-,500,TP,-,0.3	1	SA	
AL3	3301-001419	BEAD-SMD:-,220,-,500,TP,-,0.3	1	SA	
AL4	3301-001419	BEAD-SMD:-,220,-,500,TP,-,0.3	1	SA	
AQ1	0504-000128	TR-DIGITAL:-,NPN,200MW,22K/22K,SOT-23,TP	1	SA	
AQ2	0504-000156	TR-DIGITAL:KSR2103,PNP,200MW,22K/22K,SOT	1	SA	
AQ20	0504-000128	TR-DIGITAL:-,NPN,200MW,22K/22K,SOT-23,TP	1	SA	
AQ21	0504-000156	TR-DIGITAL:KSR2103,PNP,200MW,22K/22K,SOT	1	SA	
AQ3	0501-000341	TR-SMALL SIGNAL:KSC1623-L,NPN,200mW,SOT-	1	SA	
AQ4	0504-000128	TR-DIGITAL:-,NPN,200MW,22K/22K,SOT-23,TP	1	SA	
AQ40	0501-000341	TR-SMALL SIGNAL:KSC1623-L,NPN,200mW,SOT-	1	SA	
AQ41	0501-000341	TR-SMALL SIGNAL:KSC1623-L,NPN,200mW,SOT-	1	SA	
AQ5	0504-000156	TR-DIGITAL:KSR2103,PNP,200MW,22K/22K,SOT	1	SA	
AQ6	0501-000341	TR-SMALL SIGNAL:KSC1623-L,NPN,200mW,SOT-	1	SA	

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
AR1	2007-000102	R-CHIP:100Kohm,5%,1/10W,TP,1608	1	SA	
AR14	2007-000090	R-CHIP:10Kohm,5%,1/10W,TP,1608	1	SA	
AR15	2007-000075	R-CHIP:220ohm,5%,1/10W,TP,1608	1	SA	
AR16	2007-000075	R-CHIP:220ohm,5%,1/10W,TP,1608	1	SA	
AR17	2007-000078	R-CHIP:1Kohm,5%,1/10W,TP,1608	1	SA	
AR18	2007-000075	R-CHIP:220ohm,5%,1/10W,TP,1608	1	SA	
AR28	2007-000090	R-CHIP:10Kohm,5%,1/10W,TP,1608	1	SA	
AR29	2007-000075	R-CHIP:220ohm,5%,1/10W,TP,1608	1	SA	
AR3	2007-000102	R-CHIP:100Kohm,5%,1/10W,TP,1608	1	SA	
AR30	2007-000075	R-CHIP:220ohm,5%,1/10W,TP,1608	1	SA	
AR31	2007-000078	R-CHIP:1Kohm,5%,1/10W,TP,1608	1	SA	
AR32	2007-000075	R-CHIP:220ohm,5%,1/10W,TP,1608	1	SA	
AR35	2007-000074	R-CHIP:100ohm,5%,1/10W,TP,1608	1	SA	
AR40	2007-000074	R-CHIP:100ohm,5%,1/10W,TP,1608	1	SA	
AR41	2007-001179	R-CHIP:8.2Kohm,5%,1/10W,TP,1608	1	SA	
AR42	2007-000082	R-CHIP:3.3Kohm,5%,1/10W,TP,1608	1	SA	
AR43	2007-000092	R-CHIP:15Kohm,5%,1/10W,TP,1608	1	SA	
AR46	2007-001179	R-CHIP:8.2Kohm,5%,1/10W,TP,1608	1	SA	
AR47	2007-000082	R-CHIP:3.3Kohm,5%,1/10W,TP,1608	1	SA	
AR48	2007-000092	R-CHIP:15Kohm,5%,1/10W,TP,1608	1	SA	
AR49	2007-000102	R-CHIP:100Kohm,5%,1/10W,TP,1608	1	SA	
AR50	2007-000102	R-CHIP:100Kohm,5%,1/10W,TP,1608	1	SA	
ARR1	2007-000939	R-CHIP:47Kohm,1%,1/10W,TP,1608	1	SA	
ARR2	2007-000939	R-CHIP:47Kohm,1%,1/10W,TP,1608	1	SA	
ARR3	2007-000939	R-CHIP:47Kohm,1%,1/10W,TP,1608	1	SA	
ARR4	2007-000939	R-CHIP:47Kohm,1%,1/10W,TP,1608	1	SA	
ARR40	2007-000078	R-CHIP:1Kohm,5%,1/10W,TP,1608	1	SA	
ARR41	2007-000078	R-CHIP:1Kohm,5%,1/10W,TP,1608	1	SA	
ARR5	2007-000102	R-CHIP:100Kohm,5%,1/10W,TP,1608	1	SA	
ARR50	2007-000090	R-CHIP:10Kohm,5%,1/10W,TP,1608	1	SA	
ARR51	2007-000090	R-CHIP:10Kohm,5%,1/10W,TP,1608	1	SA	
ARR6	2007-000102	R-CHIP:100Kohm,5%,1/10W,TP,1608	1	SA	
AZ1	0403-001083	DIODE-ZENER:UDZ9.1B,8.85-9.23V,200MW,UMD	1	SA	
AZ2	0403-001083	DIODE-ZENER:UDZ9.1B,8.85-9.23V,200MW,UMD	1	SA	
AZ3	0403-001083	DIODE-ZENER:UDZ9.1B,8.85-9.23V,200MW,UMD	1	SA	
AZ4	0403-001083	DIODE-ZENER:UDZ9.1B,8.85-9.23V,200MW,UMD	1	SA	
BD01	3301-001419	BEAD-SMD:-,220,-,500,TP,-,0.3	1	SA	
BD02	3301-001419	BEAD-SMD:-,220,-,500,TP,-,0.3	1	SA	
C10	2203-000681	C-CER,CHIP:0.027nF,5%,50V,COG,TP,1608	1	SA	
C7	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
C8	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
C9	2203-000681	C-CER,CHIP:0.027nF,5%,50V,COG,TP,1608	1	SA	
CC1	2203-000440	C-CER,CHIP:1nF,10%,50V,X7R,TP,1608,-	1	SA	
CC10	2203-005065	C-CER,CHIP:1000nF,+80-20%,10V,Y5V,1608	1	SA	
CC12	2203-005065	C-CER,CHIP:1000nF,+80-20%,10V,Y5V,1608	1	SA	
CC13	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
CC14	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
CC15	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
CC17	2203-001103	C-CER,CHIP:6.8nF,10%,50V,X7R,TP,1608,-	1	SA	
CC2	2203-000440	C-CER,CHIP:1nF,10%,50V,X7R,TP,1608,-	1	SA	
CC20	2203-005065	C-CER,CHIP:1000nF,+80-20%,10V,Y5V,1608	1	SA	
CC21	2203-000975	C-CER,CHIP:47nF,10%,25V,X7R,TP,1608,-	1	SA	
CC22	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
CC23	2203-001052	C-CER,CHIP:0.56nF,10%,50V,X7R,TP,1608	1	SA	
CC24	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
CC25	2203-000998	C-CER,CHIP:0.047NF,5%,50V,COG,TP,1608	1	SA	
CC26	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
CC27	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
CC28	2203-005221	C-CER,CHIP:15nF,10%,50V,X7R,TP,1608,-	1	SA	
CC3	2203-000440	C-CER,CHIP:1nF,10%,50V,X7R,TP,1608,-	1	SA	
CC30	2203-001052	C-CER,CHIP:0.56nF,10%,50V,X7R,TP,1608	1	SA	
CC31	2203-005221	C-CER,CHIP:15nF,10%,50V,X7R,TP,1608,-	1	SA	
CC32	2203-005221	C-CER,CHIP:15nF,10%,50V,X7R,TP,1608,-	1	SA	
CC33	2203-001052	C-CER,CHIP:0.56nF,10%,50V,X7R,TP,1608	1	SA	
CC34	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
CC35	2203-000815	C-CER,CHIP:0.033NF,5%,50V,COG,TP,1608	1	SA	
CC36	2203-000815	C-CER,CHIP:0.033NF,5%,50V,COG,TP,1608	1	SA	
CC37	2203-000815	C-CER,CHIP:0.033NF,5%,50V,COG,TP,1608	1	SA	
CC4	2203-000440	C-CER,CHIP:1nF,10%,50V,X7R,TP,1608,-	1	SA	
CC5	2203-000189	C-CER,CHIP:100nF,+80-20%,25V,Y5V,TP,1608	1	SA	
CC8	2401-001250	C-AL:4.7uF,20%,35V,GP,TP,4x5.5	1	SA	
CCC01	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
CCC02	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
CCC03	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
CCC04	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
CCC05	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
CCC06	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
CCC07	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
CCC08	2401-001479	C-AL:470uF,20%,10V,GP,TP,6.3*11mm,5	1	SA	
CCC09	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
CCC10	2401-001479	C-AL:470uF,20%,10V,GP,TP,6.3*11mm,5	1	SA	
CCC13	2401-002144	C-AL:47uF,20%,16V,GP,TP,5x11.5	1	SA	
CCC15	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
CCC16	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
CCC17	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
CCC18	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
CCC19	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
CCC20	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
CCC21	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
CCC22	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
CCC23	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
CN41	3710-002050	CONNECTOR-SOCKET:12P,1R,2mm,STRAIGHT,SN,	1	SA	
CN42	3710-002050	CONNECTOR-SOCKET:12P,1R,2mm,STRAIGHT,SN,	1	SA	
CNL1	3301-001419	BEAD-SMD:-,220,-,500,TP,-,0.3	1	SA	
CNL2	3301-001419	BEAD-SMD:-,220,-,500,TP,-,0.3	1	SA	
CVL0	3301-001419	BEAD-SMD:-,220,-,500,TP,-,0.3	1	SA	
CVL1	3301-001419	BEAD-SMD:-,220,-,500,TP,-,0.3	1	SA	
CVL2	3301-001419	BEAD-SMD:-,220,-,500,TP,-,0.3	1	SA	
DABD1	3301-001419	BEAD-SMD:-,220,-,500,TP,-,0.3	1	SA	
DAC4	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
DAL2	2901-001273	FILTER-EMI SMD:50V,2A,-,220pF,3.2x1.6x0.	1	SA	
DAR1	2007-000402	R-CHIP:150ohm,5%,1/10W,TP,1608	1	SA	
DAR2	2007-000402	R-CHIP:150ohm,5%,1/10W,TP,1608	1	SA	
DAZ1	0403-001083	DIODE-ZENER:UDZ9.1B,8.85-9.23V,200MW,UMD	1	SA	
DAZ2	0403-001083	DIODE-ZENER:UDZ9.1B,8.85-9.23V,200MW,UMD	1	SA	
DCON1	3708-001266	CONNECTOR-FPC/FFC/PIC:11P,1MM,STRAIGHT,S	1	SA	
DCON3	3708-000491	CONNECTOR-FPC/FFC/PIC:23P,1mm,STRAIGHT,S	1	SA	
DIC2	1107-001369	IC-FLASH MEMORY:29LV800,1Mx8/512Kx16,TSO	1	SNA	
DIC3	1103-001204	IC-EEPROM:24C021,256x8,SOP,8P,5.13x3.95m	1	SA	
DIC4	0801-002701	IC-CMOS LOGIC:74VHC125A,BUFFER,TSSOP,14	1	SA	

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
DIC5	1105-001367	IC-DRAM:M12L64164A,4MX16BIT,TSOP(II),5	1	SA	
DJP10	2007-000078	R-CHIP:1Kohm,5%,1/10W,TP,1608	1	SA	
DJP11	2007-000078	R-CHIP:1Kohm,5%,1/10W,TP,1608	1	SA	
DJP2	2007-000078	R-CHIP:1Kohm,5%,1/10W,TP,1608	1	SA	
DRIC1	1003-001735	IC-MOTOR DRIVER:FAN8026G3,SSOPH,28P,18.4	1	SA	
DY1	2801-004279	CRYSTAL-UNIT:27.00MHz,10ppm,28-AAA,20pF,	1	SA	
ECC1	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
ECC2	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
FB2	3301-001419	BEAD-SMD:-,220,-,500,TP,-,0.3	1	SA	
JACK1	3722-002059	JACK-PIN:6P(6P):-,RED/WHT/BLU/BLK/GRY,A	1	SA	
JL1	2703-000125	INDUCTOR-SMD:10uH,10%,2012	1	SA	
JL2	2703-000125	INDUCTOR-SMD:10uH,10%,2012	1	SA	
LDD1	0407-000116	DIODE-ARRAY:DAP202K,80V,100mA,CK2-3,SOT-	1	SA	
LDQ1	0501-000341	TR-SMALL SIGNAL:KSC1623-L,NPN,200mW,SOT-	1	SA	
LDQ2	0501-000341	TR-SMALL SIGNAL:KSC1623-L,NPN,200mW,SOT-	1	SA	
LDQ3	0501-000341	TR-SMALL SIGNAL:KSC1623-L,NPN,200mW,SOT-	1	SA	
LDQ4	0501-000341	TR-SMALL SIGNAL:KSC1623-L,NPN,200mW,SOT-	1	SA	
LDR1	2007-000090	R-CHIP:10Kohm,5%,1/10W,TP,1608	1	SA	
LDR2	2007-000090	R-CHIP:10Kohm,5%,1/10W,TP,1608	1	SA	
LDR3	2007-000659	R-CHIP:27ohm,5%,1/10W,TP,1608	1	SA	
LDR4	2007-000090	R-CHIP:10Kohm,5%,1/10W,TP,1608	1	SA	
LDR5	2007-000090	R-CHIP:10Kohm,5%,1/10W,TP,1608	1	SA	
LDR6	2007-000659	R-CHIP:27ohm,5%,1/10W,TP,1608	1	SA	
LPC4	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
LPE1	2401-002165	C-AL:100uF,20%,16V,GP,TP,6.3x7.5	1	SA	
LPE2	2401-002165	C-AL:100uF,20%,16V,GP,TP,6.3x7.5	1	SA	
LPR1	2007-000312	R-CHIP:10ohm,5%,1/4W,TP,3216	1	SA	
LPR2	2007-000078	R-CHIP:1Kohm,5%,1/10W,TP,1608	1	SA	
LPR3	2007-000078	R-CHIP:1Kohm,5%,1/10W,TP,1608	1	SA	
LPR4	2007-000312	R-CHIP:10ohm,5%,1/4W,TP,3216	1	SA	
MC1	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
MC10	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
MC3	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
MC5	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
MCE1	2401-002165	C-AL:100uF,20%,16V,GP,TP,6.3x7.5	1	SA	
MCE10	2401-002165	C-AL:100uF,20%,16V,GP,TP,6.3x7.5	1	SA	
MCE2	2401-002165	C-AL:100uF,20%,16V,GP,TP,6.3x7.5	1	SA	
MCE3	2401-003107	C-AL:47uF,20%,16V,GP,TP,5x7.5	1	SA	
MD1	0407-000114	DIODE-ARRAY:DAN202K,80V,100mA,CA2-3,SOT-	1	SA	
opr10	2007-000123	R-CHIP:1.5Kohm,5%,1/10W,TP,1608	1	SA	
PAC10	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
PAE11	2401-001992	C-AL:2200uF,20%,10V,WT,TP,10X20MM,5	1	SA	
PAE55	2401-002594	C-AL:220uF,20%,16V,GP,TP,8x11.5,5	1	SA	
PHL11	2007-000033	R-CHIP:0ohm,5%,1/4W,TP,3216	1	SA	
PL2	2703-000398	INDUCTOR-SMD:10uH,10%,3225	1	SA	
PPBD1	3301-001419	BEAD-SMD:-,220,-,500,TP,-,0.3	1	SA	
PPC1	2203-000257	C-CER,CHIP:10nF,10%,50V,X7R,TP,1608	1	SA	
PPC2	2203-000257	C-CER,CHIP:10nF,10%,50V,X7R,TP,1608	1	SA	
PPC3	2203-000257	C-CER,CHIP:10nF,10%,50V,X7R,TP,1608	1	SA	
PPC80	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
PPC82	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
PPE1	2401-002165	C-AL:100uF,20%,16V,GP,TP,6.3x7.5	1	SA	
PPE18	2401-001479	C-AL:470uF,20%,10V,GP,TP,6.3*11mm,5	1	SA	
PPE2	2401-002165	C-AL:100uF,20%,16V,GP,TP,6.3x7.5	1	SA	
PPE25	2401-002144	C-AL:47uF,20%,16V,GP,TP,5x11.5	1	SA	

Electrical Parts List

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
PPE3	2401-002165	C-AL:100uF,20%,16V/GP,TP;6.3x7,5	1	SA	
PPE4	2401-003107	C-AL:47uF,20%,16V/GP,TP;5x7,5	1	SA	
PPIC2	1203-003132	IC-POS:ADJUST REG.:AMC1117,SOT-223,3P6	1	SA	
PPIC3	1203-003216	IC-POS:FIXED REG.:G9133,TO-220F,4P,10.1	1	SA	
PPR2	2007-000343	R-CHIP:120ohm,1%,1/10W,TP,1608	1	SA	
PPR3	2007-000074	R-CHIP:100ohm,5%,1/10W,TP,1608	1	SA	
PSR01	2007-000102	R-CHIP:100Kohm,5%,1/10W,TP,1608	1	SA	
PSR02	2007-000134	R-CHIP:33Kohm,5%,1/10W,TP,1608	1	SA	
PSR03	2007-000090	R-CHIP:10Kohm,5%,1/10W,TP,1608	1	SA	
QLP1	0501-000279	TR-SMALL SIGNAL:KSA1182-Y;PNP;150mW,SOT-	1	SA	
QLP2	0501-000279	TR-SMALL SIGNAL:KSA1182-Y;PNP;150mW,SOT-	1	SA	
R10	2007-000078	R-CHIP:1Kohm,5%,1/10W,TP,1608	1	SA	
R13	2007-000118	R-CHIP:390ohm,5%,1/10W,TP,1608	1	SA	
R36	2007-000113	R-CHIP:33ohm,5%,1/10W,TP,1608	1	SA	
R38	2007-000113	R-CHIP:33ohm,5%,1/10W,TP,1608	1	SA	
R39	2007-000113	R-CHIP:33ohm,5%,1/10W,TP,1608	1	SA	
R40	2007-000113	R-CHIP:33ohm,5%,1/10W,TP,1608	1	SA	
R41	2007-000113	R-CHIP:33ohm,5%,1/10W,TP,1608	1	SA	
R42	2007-000102	R-CHIP:100Kohm,5%,1/10W,TP,1608	1	SA	
R46	2007-000113	R-CHIP:33ohm,5%,1/10W,TP,1608	1	SA	
R47	2007-000113	R-CHIP:33ohm,5%,1/10W,TP,1608	1	SA	
R7	2007-000084	R-CHIP:4.7Kohm,5%,1/10W,TP,1608	1	SA	
R73	2007-000084	R-CHIP:4.7Kohm,5%,1/10W,TP,1608	1	SA	
R8	2007-000084	R-CHIP:4.7Kohm,5%,1/10W,TP,1608	1	SA	
R9	2007-000084	R-CHIP:4.7Kohm,5%,1/10W,TP,1608	1	SA	
RAR11	2007-000070	R-CHIP:0ohm,5%,1/10W,TP,1608	1	SA	
RC1	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
RC12	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
RC19	2203-000315	C-CER,CHIP:0.12nF,5%,50V,COG,TP,1608	1	SA	
RC20	2203-000491	C-CER,CHIP:2.2nF,10%,50V,X7R,TP,1608,-	1	SA	
RC21	2203-000491	C-CER,CHIP:2.2nF,10%,50V,X7R,TP,1608,-	1	SA	
RC23	2203-000491	C-CER,CHIP:2.2nF,10%,50V,X7R,TP,1608,-	1	SA	
RC24	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
RC25	2203-000491	C-CER,CHIP:2.2nF,10%,50V,X7R,TP,1608,-	1	SA	
RC28	2203-001222	C-CER,CHIP:0.82nF,10%,50V,X7R,TP,1608	1	SA	
RC29	2203-000257	C-CER,CHIP:10nF,10%,50V,X7R,TP,1608	1	SA	
RC30	2203-000257	C-CER,CHIP:10nF,10%,50V,X7R,TP,1608	1	SA	
RC31	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
RC32	2203-001034	C-CER,CHIP:5.6nF,10%,50V,X7R,TP,1608,-	1	SA	
RC33	2203-001034	C-CER,CHIP:5.6nF,10%,50V,X7R,TP,1608,-	1	SA	
RC34	2203-000440	C-CER,CHIP:1nF,10%,50V,X7R,TP,1608,-	1	SA	
RC35	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
RC36	2203-001034	C-CER,CHIP:5.6nF,10%,50V,X7R,TP,1608,-	1	SA	
RC37	2203-001034	C-CER,CHIP:5.6nF,10%,50V,X7R,TP,1608,-	1	SA	
RC6	2203-001103	C-CER,CHIP:6.8nF,10%,50V,X7R,TP,1608,-	1	SA	
RC7	2203-001634	C-CER,CHIP:33nF,10%,50V,X7R,TP,1608,1.6m	1	SA	
RC8	2203-001607	C-CER,CHIP:0.22nF,5%,50V,NPO,-,1608	1	SA	
RC9	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
RCL23	3301-000314	BEAD-SMD:120ohm,1.6x0.8x0.8mm,150mA,...	1	SA	
RE10	2401-001479	C-AL:470uF,20%,10V/GP,TP;6.3*11mm,5	1	SA	
RE11	2401-003107	C-AL:47uF,20%,16V/GP,TP;5x7,5	1	SA	
RFC01	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
RFE01	2401-003107	C-AL:47uF,20%,16V/GP,TP;5x7,5	1	SA	
RFR22	2007-000084	R-CHIP:4.7Kohm,5%,1/10W,TP,1608	1	SA	
RIC1	AK13-00005A	IC ASIC:SP3723DE0PM,EXIN02,64,5,+135,Q	1	SA	

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
RL1	2007-000033	R-CHIP:0ohm,5%,1/4W,TP,3216	1	SA	
RL2	2007-000033	R-CHIP:0ohm,5%,1/4W,TP,3216	1	SA	
ROC1	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
RR11	2007-000070	R-CHIP:0ohm,5%,1/10W,TP,1608	1	SA	
RR15	2007-000134	R-CHIP:33Kohm,5%,1/10W,TP,1608	1	SA	
RR16	2007-000122	R-CHIP:1.2Kohm,5%,1/10W,TP,1608	1	SA	
RR17	2007-000090	R-CHIP:10Kohm,5%,1/10W,TP,1608	1	SA	
RR18	2007-000965	R-CHIP:5.1Kohm,5%,1/10W,TP,1608	1	SA	
RR19	2007-000070	R-CHIP:0ohm,5%,1/10W,TP,1608	1	SA	
RR20	2007-000090	R-CHIP:10Kohm,5%,1/10W,TP,1608	1	SA	
RR21	2007-000087	R-CHIP:6.8Kohm,5%,1/10W,TP,1608	1	SA	
RR22	2007-000087	R-CHIP:6.8Kohm,5%,1/10W,TP,1608	1	SA	
RR24	2007-000087	R-CHIP:6.8Kohm,5%,1/10W,TP,1608	1	SA	
RR25	2007-000087	R-CHIP:6.8Kohm,5%,1/10W,TP,1608	1	SA	
RR26	2007-000087	R-CHIP:6.8Kohm,5%,1/10W,TP,1608	1	SA	
RR27	2007-000113	R-CHIP:33ohm,5%,1/10W,TP,1608	1	SA	
RR28	2007-000113	R-CHIP:33ohm,5%,1/10W,TP,1608	1	SA	
RR29	2007-000113	R-CHIP:33ohm,5%,1/10W,TP,1608	1	SA	
RR3	2007-000082	R-CHIP:3.3Kohm,5%,1/10W,TP,1608	1	SA	
RR32	2007-000113	R-CHIP:33ohm,5%,1/10W,TP,1608	1	SA	
RR36	2007-001694	R-CHIP:12Kohm,0.5%,1/10W,TP,1608	1	SA	
RR37	2007-000113	R-CHIP:33ohm,5%,1/10W,TP,1608	1	SA	
RR39	2007-000070	R-CHIP:0ohm,5%,1/10W,TP,1608	1	SA	
RR4	2007-000082	R-CHIP:3.3Kohm,5%,1/10W,TP,1608	1	SA	
RR44	2007-000113	R-CHIP:33ohm,5%,1/10W,TP,1608	1	SA	
RR5	2007-000082	R-CHIP:3.3Kohm,5%,1/10W,TP,1608	1	SA	
RR50	2007-000070	R-CHIP:0ohm,5%,1/10W,TP,1608	1	SA	
RR51	2007-000070	R-CHIP:0ohm,5%,1/10W,TP,1608	1	SA	
RR6	2007-000082	R-CHIP:3.3Kohm,5%,1/10W,TP,1608	1	SA	
RR7	2007-000090	R-CHIP:10Kohm,5%,1/10W,TP,1608	1	SA	
RR8	2007-000100	R-CHIP:68Kohm,5%,1/10W,TP,1608	1	SA	
RR9	2007-000093	R-CHIP:20Kohm,5%,1/10W,TP,1608	1	SA	
RSR1	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
SDC3	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
SDC4	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
SDC43	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
SDC49	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
SDC5	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
SDC6	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
SDC7	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
SDC8	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
SJACK	3722-001375	JACK-DIN:4P,-,NI,BLK,-	1	SA	
SR1	2007-000090	R-CHIP:10Kohm,5%,1/10W,TP,1608	1	SA	
SR10	2007-000134	R-CHIP:33Kohm,5%,1/10W,TP,1608	1	SA	
SR11	2007-000094	R-CHIP:22Kohm,5%,1/10W,TP,1608	1	SA	
SR12	2007-000129	R-CHIP:27Kohm,5%,1/10W,TP,1608	1	SA	
SR13	2007-000090	R-CHIP:10Kohm,5%,1/10W,TP,1608	1	SA	
SR14	2007-001694	R-CHIP:12Kohm,0.5%,1/10W,TP,1608	1	SA	
SR15	2007-000090	R-CHIP:10Kohm,5%,1/10W,TP,1608	1	SA	
SR16	2007-001179	R-CHIP:8.2Kohm,5%,1/10W,TP,1608	1	SA	
SR2	2007-000094	R-CHIP:22Kohm,5%,1/10W,TP,1608	1	SA	
SR3	2007-000090	R-CHIP:10Kohm,5%,1/10W,TP,1608	1	SA	
SR4	2007-000090	R-CHIP:10Kohm,5%,1/10W,TP,1608	1	SA	
SR5	2007-001694	R-CHIP:12Kohm,0.5%,1/10W,TP,1608	1	SA	
SR6	2007-001694	R-CHIP:12Kohm,0.5%,1/10W,TP,1608	1	SA	

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
SR7	2007-000070	R-CHIP:0ohm,5%,1/10W,TP,1608	1	SA	
SR8	2007-000134	R-CHIP:33Kohm,5%,1/10W,TP,1608	1	SA	
SR9	2007-000070	R-CHIP:0ohm,5%,1/10W,TP,1608	1	SA	
U1	1204-002224	IC-PAL/NTSC DECODER:ES6698FD,PQFP,208P,28	1	SADVD-V64XX/V6500	Only
U1	1204-002260	IC-PAL/NTSC DECODER:ES6629FD,PQFP,208P,28	1	SA	Other Only
VAR32	2007-001164	R-CHIP:75ohm,1%,1/10W,TP,1608	1	SA	
VAR33	2007-001164	R-CHIP:75ohm,1%,1/10W,TP,1608	1	SA	
VAR34	2007-001164	R-CHIP:75ohm,1%,1/10W,TP,1608	1	SA	
VBD1	3301-001461	BEAD-SMD:300ohm,1.6x0.8x0.8mm,300mA,TP,	1	SA	
VBD2	3301-001461	BEAD-SMD:300ohm,1.6x0.8x0.8mm,300mA,TP,	1	SA	
VC01	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
VC02	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
VC10	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
VC11	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
VC14	2203-001607	C-CER,CHIP:0.22nF,5%,50V,NPO,-,1608	1	SA	
VC15	2203-001607	C-CER,CHIP:0.22nF,5%,50V,NPO,-,1608	1	SA	
VC16	2203-001607	C-CER,CHIP:0.22nF,5%,50V,NPO,-,1608	1	SA	
VC17	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
VC30	2203-001607	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
VC44	2203-001607	C-CER,CHIP:0.22nF,5%,50V,NPO,-,1608	1	SA	
VC50	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
VC6	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
VC7	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
VC8	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
VC9	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
VE1	2401-002165	C-AL:100uF,20%,16V,GP,TP,6.3x7.5	1	SA	
VE2	2401-000922	C-AL:22uF,20%,16V,GP,TP,5x5.5	1	SA	
VE4	2401-001479	C-AL:470uF,20%,10V,GP,TP,6.3*11mm,5	1	SA	
VE5	2401-001479	C-AL:470uF,20%,10V,GP,TP,6.3*11mm,5	1	SA	
VE6	2401-001479	C-AL:470uF,20%,10V,GP,TP,6.3*11mm,5	1	SA	
VE7	2401-001479	C-AL:470uF,20%,10V,GP,TP,6.3*11mm,5	1	SA	
VGC1	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
VGE1	2401-001479	C-AL:470uF,20%,10V,GP,TP,6.3*11mm,5	1	SA	
VGO1	0501-000341	TR-SMALL SIGNAL:KSC1623-L,NPN,200mW,SOT-	1	SA	
VGR1	2007-000084	R-CHIP:4.7Kohm,5%,1/10W,TP,1608	1	SA	
VIC1	1204-001978	IC-VIDEO PROCESS:LA73054,-,36P,-,SSOP,7V	1	SA	
VIC2	1204-001748	IC-SELECTOR:MM1503XN,SOP,6P,63MIL,PLASTI	1	SA	
VL1	3301-001419	BEAD-SMD:-,220,-,500,TP,-,0.3	1	SA	
VL2	3301-001419	BEAD-SMD:-,220,-,500,TP,-,0.3	1	SA	
VL3	3301-001419	BEAD-SMD:-,220,-,500,TP,-,0.3	1	SA	
VL4	3301-001419	BEAD-SMD:-,220,-,500,TP,-,0.3	1	SA	
VL5	3301-001419	BEAD-SMD:-,220,-,500,TP,-,0.3	1	SA	
VL6	2703-000398	INDUCTOR-SMD:10uH,10%,3225	1	SA	
VR10	2007-001164	R-CHIP:75ohm,1%,1/10W,TP,1608	1	SA	
VR11	2007-001164	R-CHIP:75ohm,1%,1/10W,TP,1608	1	SA	
VR12	2007-001167	R-CHIP:75ohm,5%,1/10W,TP,1608	1	SA	
VR13	2007-001164	R-CHIP:75ohm,1%,1/10W,TP,1608	1	SA	
VR14	2007-000074	R-CHIP:100ohm,5%,1/10W,TP,1608	1	SA	
VR19	2007-000084	R-CHIP:4.7Kohm,5%,1/10W,TP,1608	1	SA	
VR2	2007-001164	R-CHIP:75ohm,1%,1/10W,TP,1608	1	SA	
VR20	2007-001167	R-CHIP:75ohm,5%,1/10W,TP,1608	1	SA	
VR21	2007-001167	R-CHIP:75ohm,5%,1/10W,TP,1608	1	SA	
VR3	2007-001164	R-CHIP:75ohm,1%,1/10W,TP,1608	1	SA	
VR33	2007-001167	R-CHIP:75ohm,5%,1/10W,TP,1608	1	SA	
VR34	2007-001167	R-CHIP:75ohm,5%,1/10W,TP,1608	1	SA	

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
VR4	2007-001164	R-CHIP:75ohm,1%,1/10W,TP,1608	1	SA	
VR5	2007-000074	R-CHIP:100ohm,5%,1/10W,TP,1608	1	SA	
VR6	2007-001164	R-CHIP:75ohm,1%,1/10W,TP,1608	1	SA	
VR7	2007-001164	R-CHIP:75ohm,1%,1/10W,TP,1608	1	SA	
VR8	2007-001164	R-CHIP:75ohm,1%,1/10W,TP,1608	1	SA	
VR9	2007-001164	R-CHIP:75ohm,1%,1/10W,TP,1608	1	SA	
VRC17	2007-000070	R-CHIP:0ohm,5%,1/10W,TP,1608	1	SA	
VRC19	2007-000078	R-CHIP:1Kohm,5%,1/10W,TP,1608	1	SA	
VR01	0504-000156	TR-DIGITAL:KSR2103,PNP,200MW,22K/22K,SOT	1	SA	
VSC1	2203-000257	C-CER,CHIP:10nF,10%,50V,X7R,TP,1608	1	SA	
VZ10	0403-001083	DIODE-ZENER:UDZ9.1B,8.85-9.23V,200MW,UMD	1	SA	
VZ11	0403-001083	DIODE-ZENER:UDZ9.1B,8.85-9.23V,200MW,UMD	1	SA	
VZ12	0403-001083	DIODE-ZENER:UDZ9.1B,8.85-9.23V,200MW,UMD	1	SA	
VZ20	0403-001083	DIODE-ZENER:UDZ9.1B,8.85-9.23V,200MW,UMD	1	SA	
VZ21	0403-001083	DIODE-ZENER:UDZ9.1B,8.85-9.23V,200MW,UMD	1	SA	
VZ22	0403-001083	DIODE-ZENER:UDZ9.1B,8.85-9.23V,200MW,UMD	1	SA	
VZ23	0403-001083	DIODE-ZENER:UDZ9.1B,8.85-9.23V,200MW,UMD	1	SA	
VZ5	0403-001083	DIODE-ZENER:UDZ9.1B,8.85-9.23V,200MW,UMD	1	SA	
VZ6	0403-001083	DIODE-ZENER:UDZ9.1B,8.85-9.23V,200MW,UMD	1	SA	
VZ7	0403-001083	DIODE-ZENER:UDZ9.1B,8.85-9.23V,200MW,UMD	1	SA	
VZ8	0403-001083	DIODE-ZENER:UDZ9.1B,8.85-9.23V,200MW,UMD	1	SA	
VZ9	0403-001083	DIODE-ZENER:UDZ9.1B,8.85-9.23V,200MW,UMD	1	SA	
ZC47	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
ZC49	2203-005148	C-CER,CHIP:100nF,10%,16V,X7R,TP,1608	1	SA	
ZR49	2007-000078	R-CHIP:1Kohm,5%,1/10W,TP,1608	1	SA	
ZR50	2007-000078	R-CHIP:1Kohm,5%,1/10W,TP,1608	1	SA	
P005	AK94-00066A	ASSY SORT-FUNCTION:DVD-V6500/XEF,FUNCTIO	1	SA	
CN701	3710-001918	CONNECTOR-SOCKET:6P,1R,2MM,ANGLE,SN	1	SA	
SW707	3404-001182	SWITCH-TACT:DC12V,50MA,100GF,6.0X6.0X5.0	1	SA	
SW708	3404-001182	SWITCH-TACT:DC12V,50MA,100GF,6.0X6.0X5.0	1	SA	
SW709	3404-001182	SWITCH-TACT:DC12V,50MA,100GF,6.0X6.0X5.0	1	SA	
SW710	3404-001182	SWITCH-TACT:DC12V,50MA,100GF,6.0X6.0X5.0	1	SA	
SW713	3404-001182	SWITCH-TACT:DC12V,50MA,100GF,6.0X6.0X5.0	1	SA	
SW714	3404-001182	SWITCH-TACT:DC12V,50MA,100GF,6.0X6.0X5.0	1	SA	
SW715	3404-001182	SWITCH-TACT:DC12V,50MA,100GF,6.0X6.0X5.0	1	SA	
SW716	3404-001182	SWITCH-TACT:DC12V,50MA,100GF,6.0X6.0X5.0	1	SA	
F/DECK	AC97-02542A	ASSY-FULL DECK:DR-SEM,CMT-SK LO,DX11A,6S	1	SNA	
S.N.A	AC97-02575A	ASSY-DECK:ASSY-DECK,SEM-CMT,DX11A,for ZE	1	SNA	
S.N.A	AC97-02205A	ASSY-DECK COMMON:ASSY-DECK COMMON,DX-11,	1	SNA	
S.N.A	AC97-00031A	ASSY-SUB MATERIAL:-,DX9-R,-	1	SNA	
S.N.A	0205-001033	GREASE:PL-30G,W050030019,-	1.16	SNA	
S.N.A	0205-001035	OIL-EP-56,W050050072,MICHANG	0.04	SNA	
S.N.A	AC97-01190A	ASSY-T-TENSION BLOCK:-,TS-10,-	1	SNA	
S.N.A	AC61-00111A	POST-TENSION GUIDE:TS-10,SUS 303,-,-,-,-,-	1	SNA	
S.N.A	AC66-00018A	LEVER-TENSION:TS-10,SECC E20/20,0.8,-,-,-	1	SNA	
S.N.A	AC61-00091A	HOLDER-BAND BRAKE:TS-10,POM,-,-,-,-,BLK,-	1	SNA	
S.N.A	AC63-12028A	BAND-BRAKE SUB ASSY:-,LUMI.+FELT(aA)T100	1	SNA	
S.N.A	AC97-01196A	ASSY-REEL BLOCK:-,TS-10,-	1	SNA	
S.N.A	AC61-20994A	HOLDER-CLUTCH:-,POM,-,-,-,-,-	1	SNA	
S.N.A	AC61-62030A	SPRING ETC-WRAP PLAY:X-9,SUS 304-WPB,9.8	1	SNA	
S.N.A	AC61-62031A	SPRING ETC-WRAP REV:X-9,SUS 304-WPB,9.8	1	SNA	

Electrical Parts List

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
S.N.A	AC66-10269A	PULLEY-CLUTCH; POM(M90-44),,,-,-,-	1	SNA	
S.N.A	AC66-20578A	GEAR-CENTER 1; POM(M90-44),,,-,-,-,X-9	1	SNA	
S.N.A	AC66-20579A	GEAR-CENTER 2; POM(M90-44),,,-,-,-,X-9	1	SNA	
S.N.A	AC66-00040A	LEVER-IDLER ASS'Y; TS-10,POM+PET,,,-,-,-,-	1	SNA	
S.N.A	AC97-01197A	ASSY-PINCH BLOCK; TS-10,-	1	SNA	
S.N.A	AC60-30304A	FASTENER-WASHER PINCH; -,D2.7,D4.4,T0.2	1	SNA	
S.N.A	AC61-00104A	SPRING ETC-PINCH; TS-10,SUS304-WPB,,,-,-,-	1	SNA	
S.N.A	AC61-00329A	POST-PINCH ROLLER; TS-10A,SWCH18A,OD2.5,L	1	SNA	
S.N.A	AC61-21006A	CAP-PINCH X-9,POM,,,-,-,-,-	1	SNA	
S.N.A	AC66-00007A	LEVER-PINCH MAIN; TS-10,SECC E20/20,1.2,-	1	SNA	
S.N.A	AC66-00015A	LEVER-PINCH SUB; TS-10,SECC E20/20,0.8,-	1	SNA	
S.N.A	AC66-00031A	ROLLER-PINCH; TS-10,RUBBER,14,L18.4,-,-,-	1	SNA	
S.N.A	AC97-01198A	ASSY-BRAKE BLOCK; TS-10,-	1	SNA	
S.N.A	AC60-40645A	FASTENER-PIN BRAKE; -,1.5,L=12,-,SWCH10	1	SNA	
S.N.A	AC66-30526A	LEVER-S. BRAKE; POM,,,-,-,-,-,-	1	SNA	
S.N.A	AC60-40645A	FASTENER-PIN BRAKE; -,1.5,L=12,-,SWCH10	1	SNA	
S.N.A	AC61-60563A	SPRING ETC-TBRAKE; X-9,SUS304-WPB,3.4,-	1	SNA	
S.N.A	AC66-30525A	LEVER-T. BRAKE; POM,,,-,-,-,-,-	1	SNA	
S.N.A	AC69-12136A	PAD-TBRAKE; X-9,FUR FELT,1.5,10.7,2.9,-	1	SNA	
S.N.A	AC97-02206A	ASSY-LOADING BLOCK; ASSY-LOADING BLOCK,DX	1	SNA	
S.N.A	AC61-60572A	SPRING ETC-LOADING; X-9,SUS304WPB,OD15,-	1	SNA	
S.N.A	AC66-00079A	GEAR-S. LOADING; X-11,POM(K300),,-,-,BLUE	1	SNA	
S.N.A	AC66-30553A	LEVER-LOADING S; SECC E20/20,T1.0,47,-	1	SNA	
S.N.A	AC61-60572A	SPRING ETC-LOADING; X-9,SUS304WPB,OD15,-	1	SNA	
S.N.A	AC66-00080A	GEAR-T. LOADING; X-11,POM(K300),,-,-,BLUE	1	SNA	
S.N.A	AC66-30554A	LEVER-LOADING T; SECC E20/20,T1.0,43,-	1	SNA	
S.N.A	AC97-02207A	ASSY-T GUIDE BLOCK; ASSY-T GUIDE BLOCK,DX	1	SNA	
S.N.A	AC61-20998A	BASE-SUPPLY SLIDER; PPS FOTRAN 6165A4,X-9	1	SNA	
S.N.A	AC61-50666A	POST-SLANT GUIDE S; X-9,SUS303,OD3,L28,-	1	SNA	
S.N.A	AC66-40153A	ROLLER-SUPPLY ASSY; -,VW-32,OD7,-,X-9	1	SNA	
S.N.A	AC61-20996A	BASE-TAKE UP SLIDER; PPS FOTRAN 6165A4,X-	1	SNA	
S.N.A	AC61-50665A	POST-SLANT GUIDE T; X-9,SUS303,OD3,L27,-	1	SNA	
S.N.A	AC66-40154A	ROLLER-TAKE UP ASSY; -,VW-32,OD7,-,X-9	1	SNA	
S.N.A	AC97-02573A	ASSY-DECK ONLY; ASSY-DECK ONLY,DX11A(ZEUS	1	SNA	
S.N.A	3708-001634	CONNECTOR-FPC/FFC/PIC; 3P,1.25MM,ANGLE,SN	1	SNA	
S.N.A	AC31-12016F	MOTOR-LOADING; MDHB2B66,SCORPIO2(TS-10A),	1	SNA	
S.N.A	AC41-00238A	PCB-LOADING MOTOR; SCORPIO2(TS-10A),,-,-	1	SNA	
S.N.A	AC66-00010A	GEAR WORM; TS-10,POM,0.8,1,-,NAT,7.1,-,-	1	SNA	
S.N.A	AC97-02210A	ASSY-FE HEAD BLOCK; ASSY-FE HEAD BLOCK,DX	1	SNA	
S.N.A	AC97-02211A	ASSY-M/B BLOCK; ASSY-M/B BLOCK,DX-11,SUM	1	SNA	
S.N.A	AC97-02193A	ASSY-BASE MAIN; SECC+POM+SWCH18A,X-11,For	1	SNA	
S.N.A	AC61-00123A	POST-#8 SUB ASS'Y; TS-10,SUS 303,,,-,-,-	1	SNA	
S.N.A	AC61-00113A	POST-#8 GUIDE; TS-10,SUS 303,,,-,-,-	1	SNA	
S.N.A	AC70-00001A	FLANGE-#8 GUIDE; TS-10,SUS303,1,-,-,-,-	1	SNA	
S.N.A	AC81-00003A	SLEEVE-#8 GUIDE; POM(M90-44) EOV,NTR,-,-	1	SNA	
S.N.A	AC61-00114A	POST-DIA 2.5; TS-10,SWCH18A,,,-,-,-	2	SNA	
S.N.A	AC61-00339A	BASE-MAIN; X-11,SECC 20/20,T1.2,-,-,NTR,-	1	SNA	
S.N.A	AC61-00342A	POST-LOADING; X-11,SWCH18A,OD3.0,L9.9,NTR	5	SNA	
S.N.A	AC61-50672A	POST-PINCH LEVER; X-9,SWCH18A,-,L24,-,-	1	SNA	
S.N.A	AC61-50675A	POST-REEL; X-9,SWCH18A,-,L24,-,-	2	SNA	
S.N.A	AC61-50677A	POST-FL CAM GEAR; X-9,SWCH18A,-,L14,-,-	1	SNA	
S.N.A	AC61-50678A	POST-CENTER; X-9,SWCH18A,OD3,L27,-,-	1	SNA	
S.N.A	AC97-02373A	ASSY-FL BLOCK; ASSY-FL BLOCK,DX-11A,VE Sp	1	SNA	
S.N.A	AC61-00365A	HOLDER-FL CASSETTE L; X-11,POM,T1.2,W25,	1	SNA	
S.N.A	AC61-00366A	HOLDER-FL CASSETTE R; X-11,POM,T1.2,W25,	1	SNA	

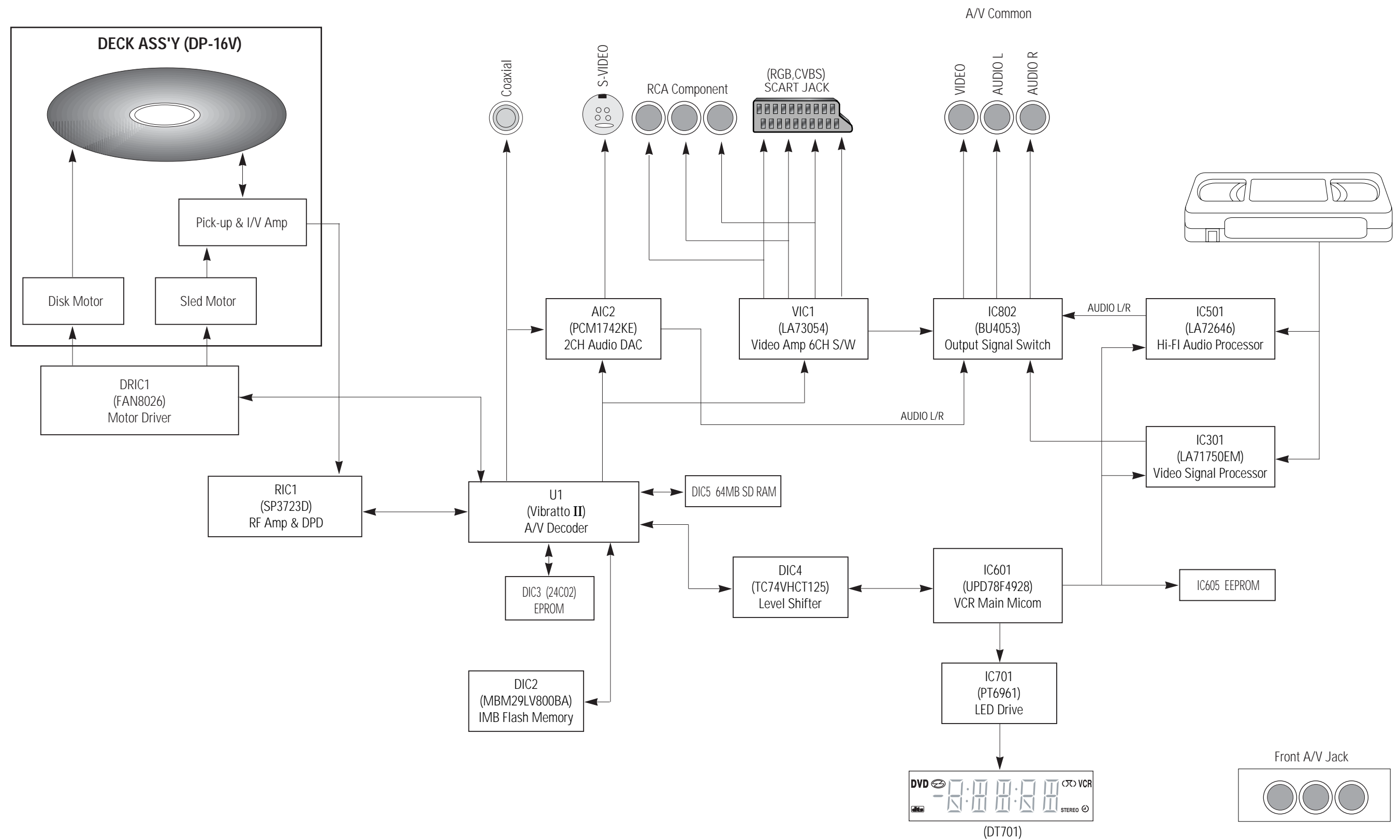
Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
S.N.A	AC66-00003A	LEVER-FL CASS. RTS-10,SECC E20/20,1.0,-	1	SNA	
S.N.A	AC70-00005A	PLATE-FL CASSETTE; X-11,SECC E20/20,T0.8,	1	SNA	
S.N.A	AC61-00108A	SPRING ETC-FL ARM R; TS-10,SUS304-WPB,-,-	1	SNA	
S.N.A	AC66-00081A	LEVER-FL ARM L; X-11,POM(M90-44 Ekv),,-	1	SNA	
S.N.A	AC66-00082A	LEVER-FL ARM R; X-11,POM(M90-44 Ekv),,-	1	SNA	
S.N.A	AC70-00004A	PLATE-FL ARM; X-11,SECC E20/20,T1.6,W9,L1	1	SNA	
S.N.A	AC97-02519A	ASSY-ACE HEAD BLOCK; ASSY-ACE HEAD BLOCK,	1	SNA	
S.N.A	3708-001676	CONNECTOR-FPC/FFC/PIC; 6P,1.25MM,ANGLE,SN	1	SNA	
S.N.A	6001-001712	SCREW-MACHINE; PH,+M2,L8,	3	SNA	
S.N.A	AC33-00016A	HEAD-ACE; HVMXA1138A,,,-,-,-	1	SNA	
S.N.A	AC41-00130A	PCB-ACE HEAD; TS-10,,,-,-,-,-,-,ALPS	1	SNA	
S.N.A	AC61-20997A	BASE-ACE MAIN; SECC; X-9(TS),T1.2,-,-,GRY,	1	SNA	
S.N.A	AC61-60552A	SPRING ETC-ACE COM; X-9,SUS304-WPB,0.50,-	3	SNA	
S.N.A	AC97-02572A	ASSY-CAPSTAN BLOCK; ASSY-CAPSTAN BLOCK,DX	1	SNA	
T003	AC97-01652A	ASSY-LOADING MOTOR; SANKYO LOADING MOTOR,	1	SNA	
T053	AC66-82074A	LINK-LOADING S; SECC E20/20,T0.8,-,X-9	1	SNA	
T055	AC66-82075A	LINK-LOADING T; SECC E20/20,T0.8,-,X-9	1	SNA	
T073	AC61-00102A	SPRING ETC-FL CASSETTE; TS-10,SUS304-CSP,	1	SNA	
H100	AK97-01107A	ASSY-DVD DECK; DP-16V,LEFT,GRAY	1	SNA	
H401	AK61-00252A	FRAME-MAIN; DP-15,ABS,,,-,-,T36.3,W150,L1	1	SNA	
DSW1	3409-001138	SWITCH-DETECTOR; 5V DC,1A,DPST,30GF,-	1	SA	
H206	AK61-00032A	HOLDER-CAM SKEW; DP-9,POM,,,-,-,-,BLACK,-	1	SA	
S.N.A	AH97-00448B	ASSY-SUB MATERIAL; DP-7S,-,-	1	SNA	
S.N.A	0205-001033	GREASE; PL-30G; W005030019,-	0.5	SNA	
S.N.A	0205-001048	GREASE-BEARING; G-754,BRN,1Kg/6	0.01	SNA	
S.N.A	AK97-01006A	ASSY-HOLDER CHUCK; -,DP-16,-	1	SNA	
S.N.A	AK97-01071A	ASSY-HOUSING; -,DP-16,COMBO	1	SNA	
S.N.A	AH31-00025A	MOTOR-LOADING; RF-300EA-1D390,DP-7,170mA,	1	SNA	
S.N.A	AK66-00006A	PULLEY MOTOR; DP-9,POM,-,BLK,,,-,-,-	1	SNA	
S.N.A	AK41-00146A	PCB-DECK; DP-15,,,-,-,-,-,-,-	1	SNA	
S.N.A	AK41-00147A	FFC-DECK; DP-15,-,FFC,T1,T0.3,-	1	SNA	
S.N.A	AK97-01105A	ASSY-P U DECK; -,DP-16S,-	1	SNA	
S.N.A	AK97-01106A	ASSY-SUB DECK; -,DP-16S,SEM	1	SNA	
S.N.A	AH66-00077A	GEAR-FEED MOTOR; POM M90-44,,,-,-,-,-	1	SNA	
S.N.A	AK31-00006A	MOTOR-FEED; RF-300EA-1D390,DP-9,90MA,-,-	1	SNA	
S.N.A	AK61-00362A	BRACKET-DECK OUTSET; DP-16,POM,T1.2,-,-	1	SNA	
S.N.A	AK61-00361A	BRACKET-DECK; DP-16,SECC T1.2,T1.2,-,-,GR	1	SNA	
W010	6003-001157	SCREW-TAPTITE; PWH,+B,M2,L6,ZPC(YEL),SWR	1	SA	
W012	6002-001086	SCREW-TAPPING; PH,+B,M1.7,L5.0,ZPC(YEL),	2	SA	
W001	6003-000275	SCREW-TAPTITE; BH,+B,M3,L10,BLK,SWCH101	3	SA	
W202	6003-000277	SCREW-TAPTITE; BH,+B,M3,L12,ZPC(YEL),SWR	5	SA	
W200	6003-001375	SCREW-TAPTITE; BH,+B,M3,L8,ZPC(YEL),SWRC	5	SA	
W252	AC60-12126A	SCREW-MACHINE; -,FE,FZY,BH,-,4*12,-,-	4	SA	
	AC39-22017Z	CABLE-RCA PHONE CORD; -,1500M/M,SINGLE,	1	SA	
	AC39-42001U	CABLE-RCA PHONE CORD; DOUBLE,-,1.5MT,BLK,	1	SA	
	AC39-00017A	CABLE-ETC-RF(PAL); -,MALE/FEMALE,1200MM,R	1	SA	
W004	6003-000283	SCREW-TAPTITE; BH,+B,M3,L8,ZPC(YEL),SWRC	1	SA	
	AK68-00646E	MANUAL USERS; DVD-V6500,XEC,ES,PT,-,MOJ08			DVD-V5450/XEC
	AK69-00260X	PACKING CASE; DVD-V5450/XEF,SW2,OFFSET,T5			DVD-V5450/XEC
	AK68-00646K	MANUAL USERS; DVD-V6500,EUR,EN,HU,-,MOJ08			DVD-V5450/EUR
	AK69-00260Z	PACKING CASE; DVD-V5450/XEG,SW2,OFFSET,T5			DVD-V5450/EUR

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
	AK68-00646F	MANUAL USERS:DVD-V6500,XEE,SV,NO,FI,D			DVD-V5450/XEE
	AK68-00646D	MANUAL USERS:DVD-V6500,XEN,DUTCH,-,MOJO8			DVD-V5450/XEN
	AK68-00646G	MANUAL USERS:DVD-V6500,XEG,GERMAN,-,MOJO8			DVD-V5450/XEG
	AK69-00260Z	PACKING CASE:DVD-V5450/XEG,SW2,OFFSET,T5,			DVD-V5450/XEG
	AK68-00648H	MANUAL USERS:DVD-V7500K,BPT,EN,ID,-,MOJO			DVD-V5450/XEH
	AK69-00260Z	PACKING CASE:DVD-V5450/XEG,SW2,OFFSET,T5			DVD-V5450/XEH
	AK68-00646L	MANUAL USERS:DVD-V6500,XEO,POLISH,-,MOJO			DVD-V5450/XEO
	AK69-00260Z	PACKING CASE:DVD-V5450/XEG,SW2,OFFSET,T5			DVD-V5450/XEO
SCART	AC39-00018A	CABLE-ETC-RF(SECAM);-,BOTH MALE,1200MM,R			DVD-V5450/XEB
	AK68-00646B	MANUAL USERS:DVD-V6500,XEB,EN,DE,FR,IT,N			DVD-V5450/XEB
	AC39-00015A	CABLE-SCART;-,RGB-COVER,1200MM,NUL9.5,BK			DVD-V5450/XEF
	AC39-00018A	CABLE-ETC-RF(SECAM);-,BOTH MALE,1200MM,R			DVD-V5450/XEF
	AK68-00646A	MANUAL USERS:DVD-V5500,XEF,FRENCH,FRANCE			DVD-V5450/XEF
	AK68-00646J	MANUAL USERS:DVD-V6500,XET,ITALIAN,-,MOJ			DVD-V5350/XET
	AK69-00339A	PACKING CASE:DVD-V5350/XET,SW2,OFFSET,T5			DVD-V5350/XET
	AK69-00260W	PACKING CASE:DVD-V6400/XEF,SW2,OFFSET,T5,			DVD-V6400/XEC
	AK68-00646D	MANUAL USERS:DVD-V6500,XEN,DUTCH,-,MOJO8			DVD-V6400/XEN
	AK69-00260W	PACKING CASE:DVD-V6400/XEF,SW2,OFFSET,T5			DVD-V6400/XEN
	AK68-00646J	MANUAL USERS:DVD-V6500,XET,ITALIAN,-,MOJO			DVD-V6450/XET
	AK69-00260Y	PACKING CASE:DVD-V6450/XET,SW2,OFFSET,T5,			DVD-V6450/XET
	AK68-00648H	MANUAL USERS:DVD-V7500K,BPT,EN,ID,-,MOJO			DVD-V6500/XEH
	AK69-00260A	PACKING CASE:DVD-V6500/XEF,SW2,OFFSET,T5			DVD-V6500/XEH
	AK68-00648H	MANUAL USERS:DVD-V7500K,BPT,EN,ID,-,MOJO			DVD-V5500/XEH
	AK69-00260Q	PACKING CASE:DVD-V5500/XEG,SEIN,SW2,OFFSE			DVD-V5500/XEH
	AK68-00646B	MANUAL USERS:DVD-V6500,XEB,EN,DE,FR,IT,N			DVD-V6400/XEB
	AK69-00260W	PACKING CASE:DVD-V6400/XEF,SW2,OFFSET,T5			DVD-V6400/XEB
	AC39-00018A	CABLE-ETC-RF(SECAM);-,BOTH MALE,1200MM,R			DVD-V6400/XEB
	AC39-00018A	CABLE-ETC-RF(SECAM);-,BOTH MALE,1200MM,R			DVD-V6400/XEF
SCART	AK68-00646A	MANUAL USERS:DVD-V5500,XEF,FRENCH,FRANCE			DVD-V6400/XEF
	AK69-00260W	PACKING CASE:DVD-V6400/XEF,SW2,OFFSET,T5			DVD-V6400/XEF
	AC39-00015A	CABLE-SCART;-,RGB-COVER,1200MM,NUL9.5,BK			DVD-V6400/XEF

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
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8. Block Diagram



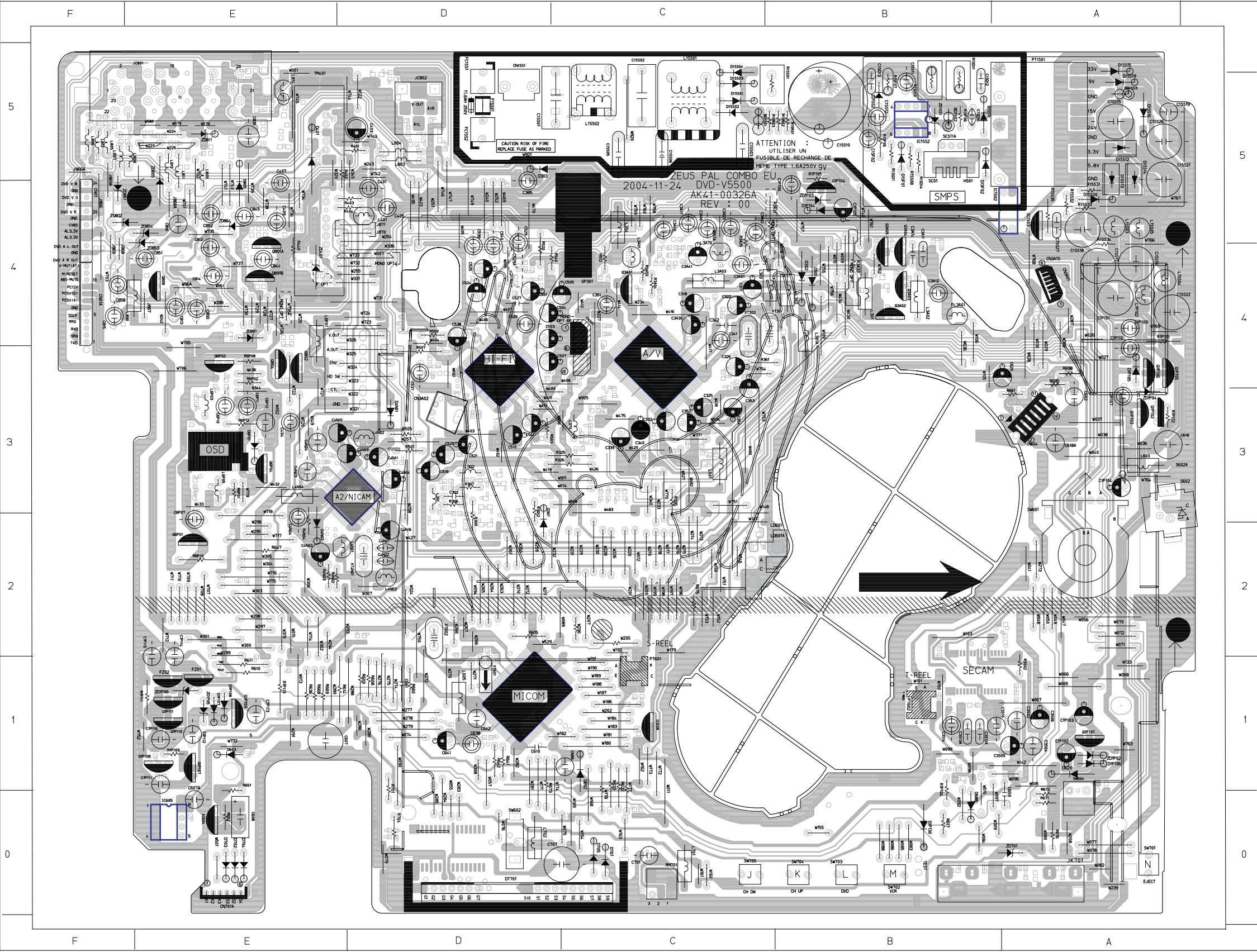
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10. PCB Diagrams

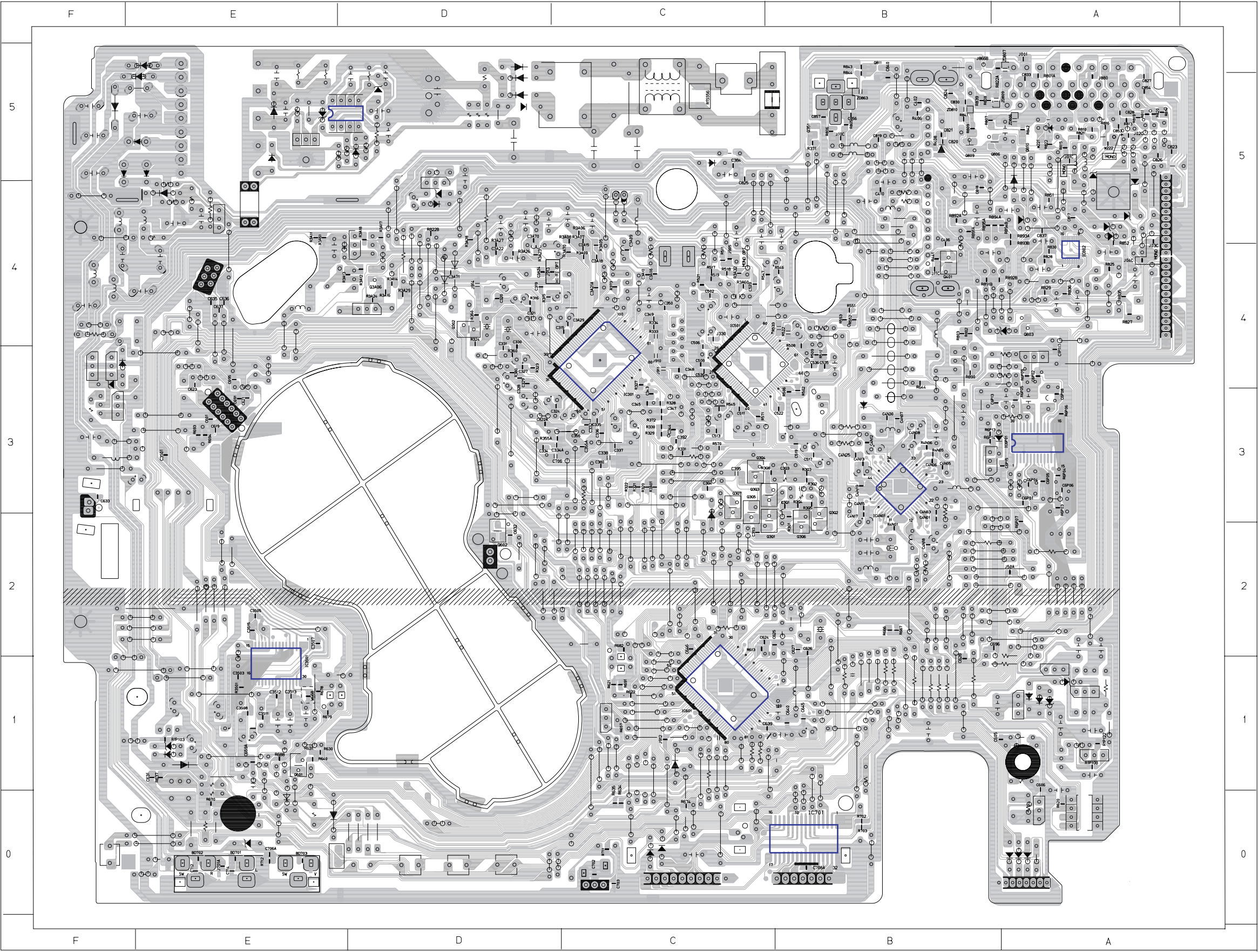
10-1 VCR Main PCB- - - - -	10-2
10-2 DVD Main PCB - - - - -	10-4
10-3 Front PCB - - - - -	10-6

10-1 VCR Main PCB

COMPONENT SIDE

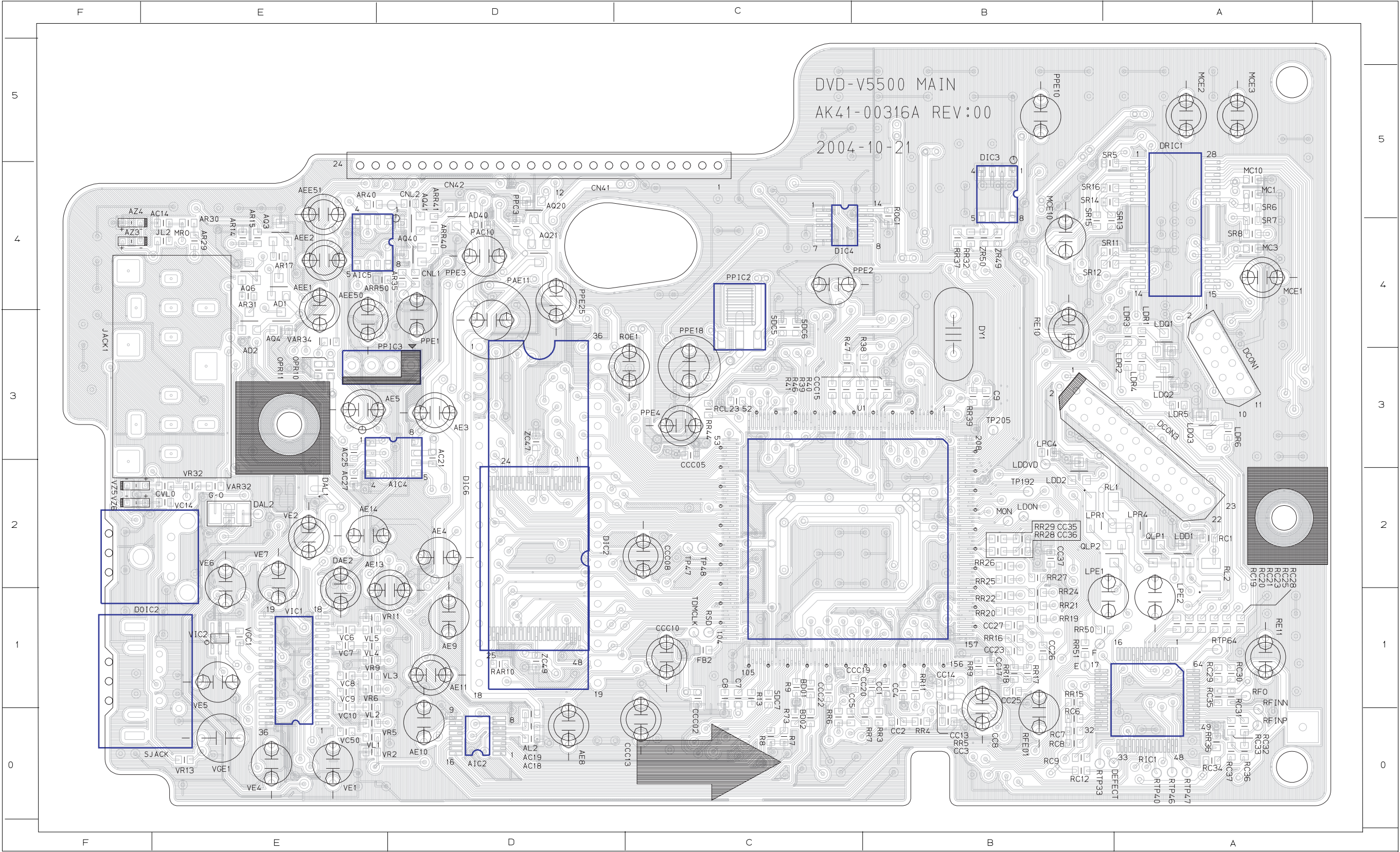


CONDUCTOR SIDE

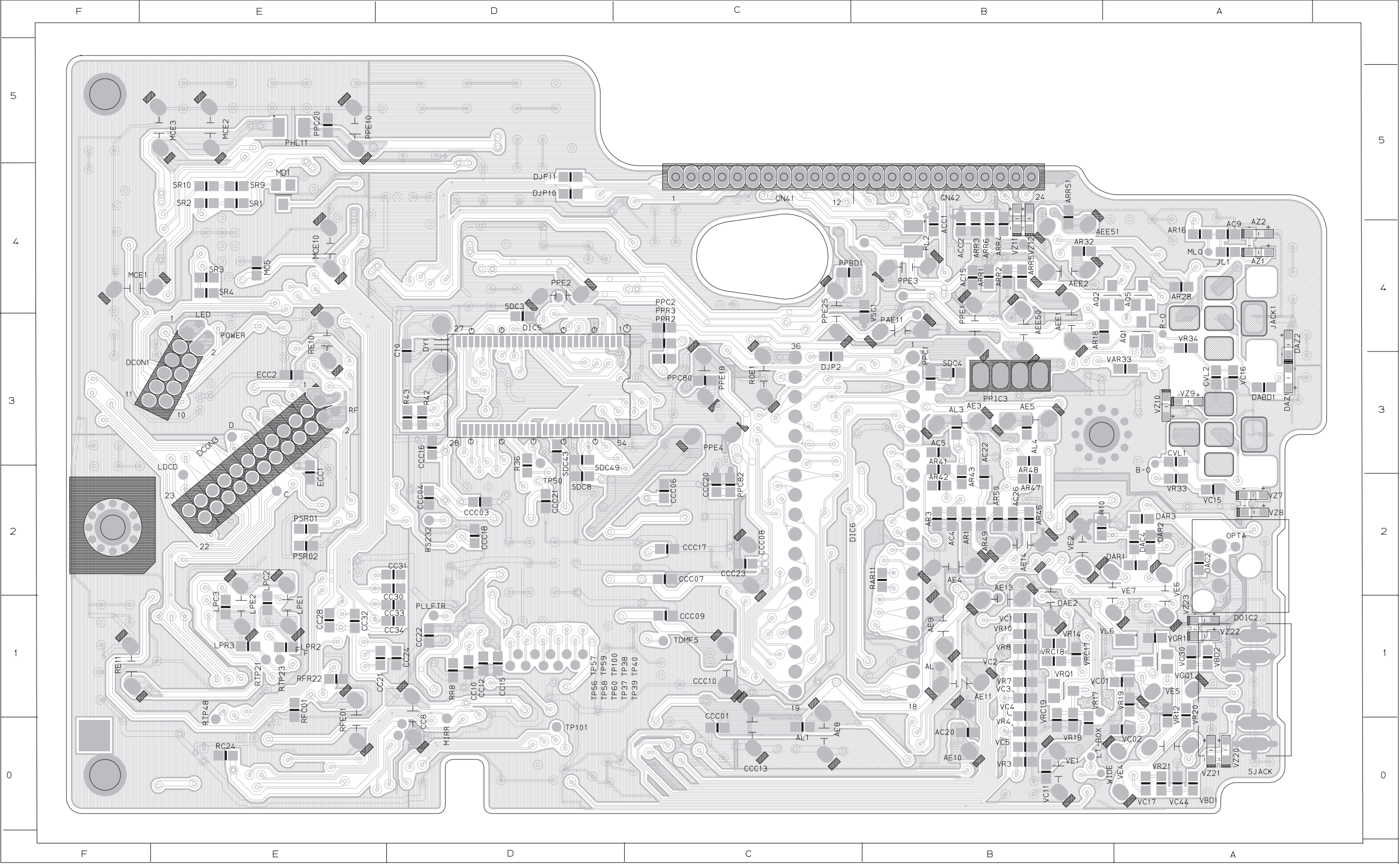


10-2 DVD Main PCB

COMPONENT SIDE

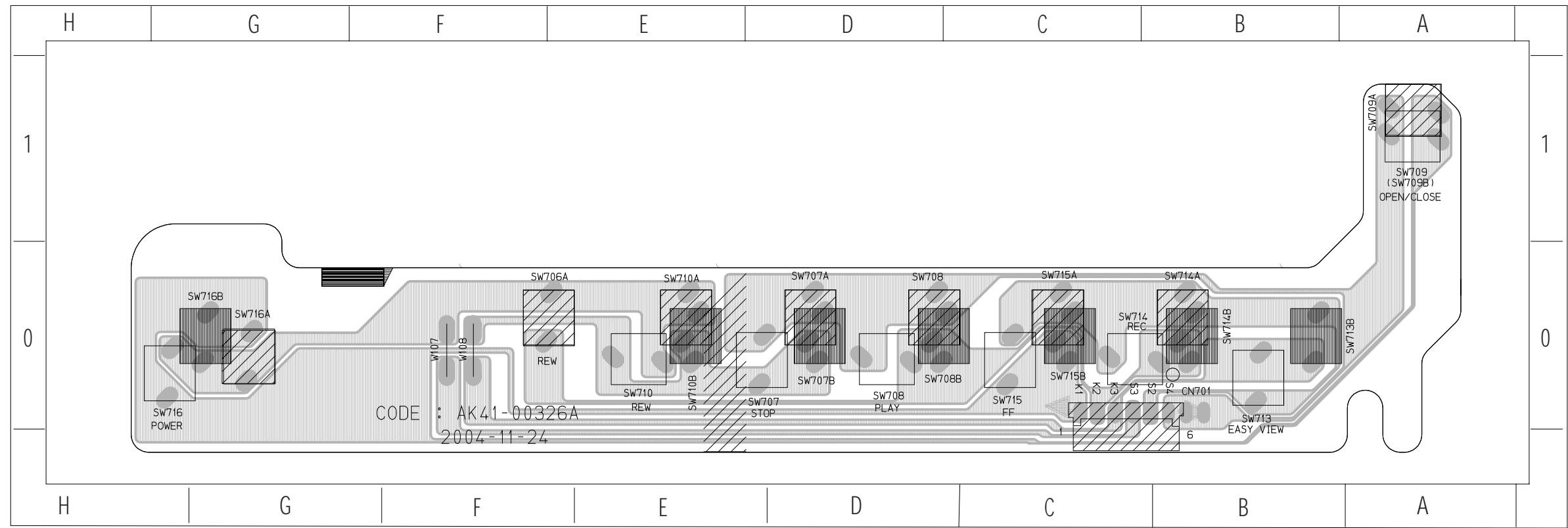


CONDUCTOR SIDE

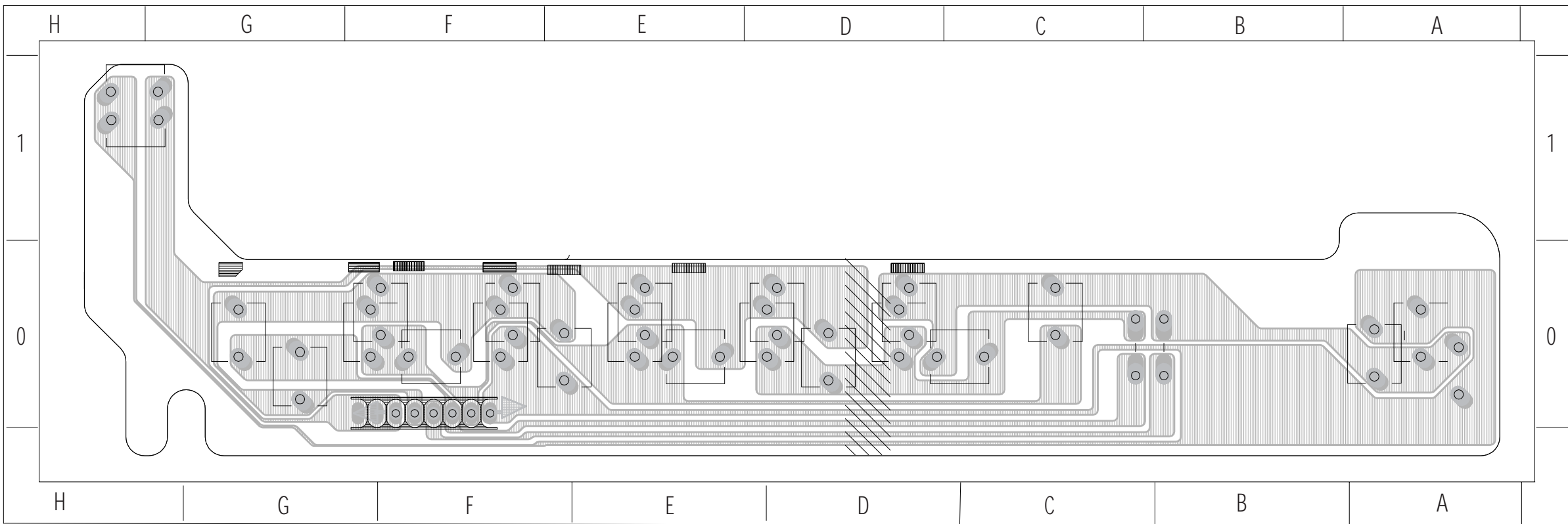


10-3 Front PCB

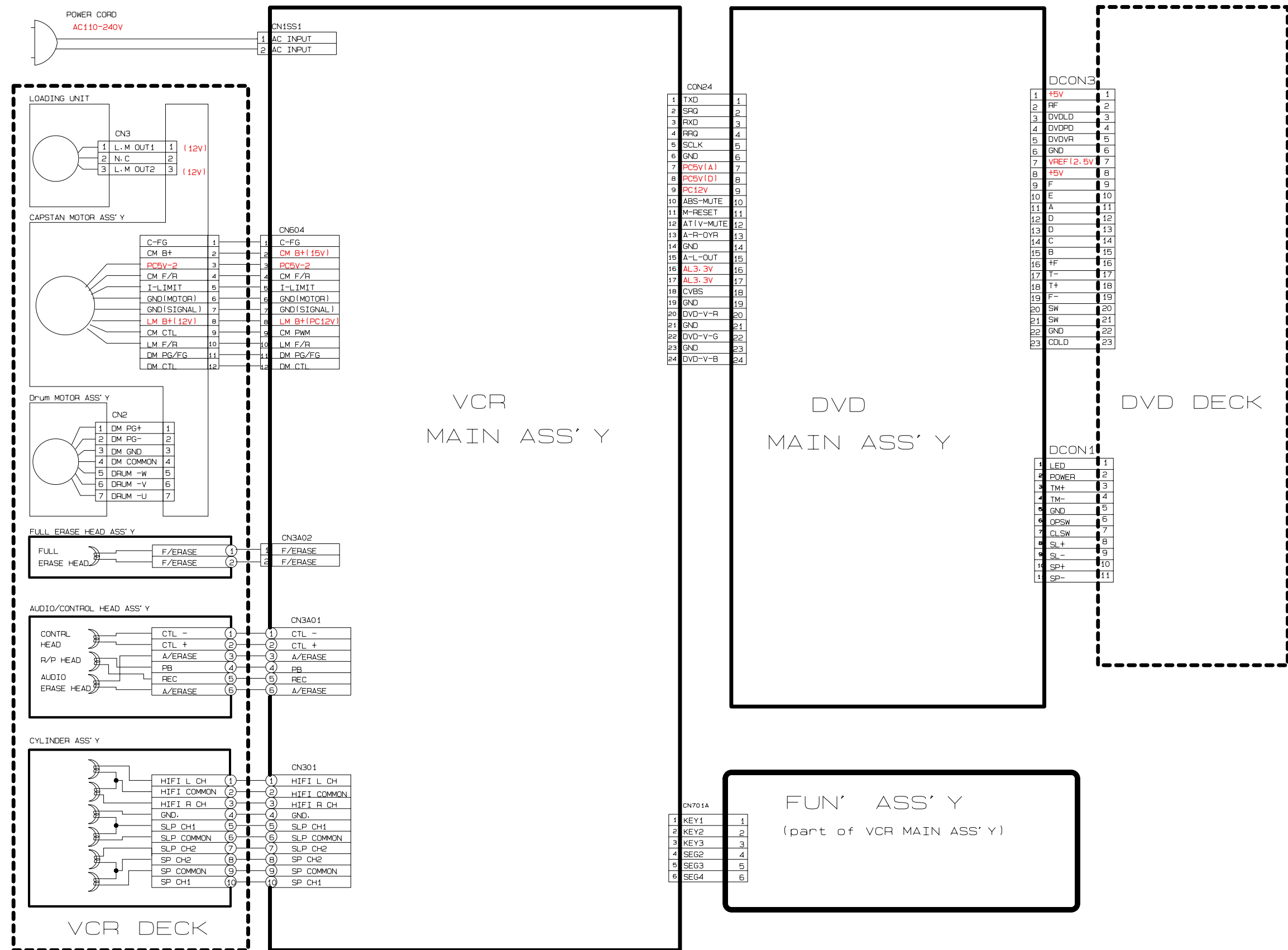
COMPONENT SIDE



CONDUCTOR SIDE



9. Wiring Diagram



MEMO

11. Schematic Diagrams

11-1 S.M.P.S. - - - - -	11-2
11-2 Power Drive - - - - -	11-3
11-3 Syscon/Servo - - - - -	11-4
11-4 Logic - - - - -	11-5
11-5 A/V - - - - -	11-6
11-6 Hi-Fi- - - - -	11-7
11-7 A2/NICAM- - - - -	11-8
11-8 SECAM (Option)- - - - -	11-9
11-9 OSD/VPS/PDC - - - - -	11-10
11-10 TM - - - - -	11-11
11-11 I/O - - - - -	11-12
11-12 DVD A/V Codec & Memory Interface - - - - -	11-13
11-13 DVD RF & Servo - - - - -	11-14
11-14 DVD Video Output- - - - -	11-15
11-15 B/B Connector & Power Connection - - - - -	11-16

Note

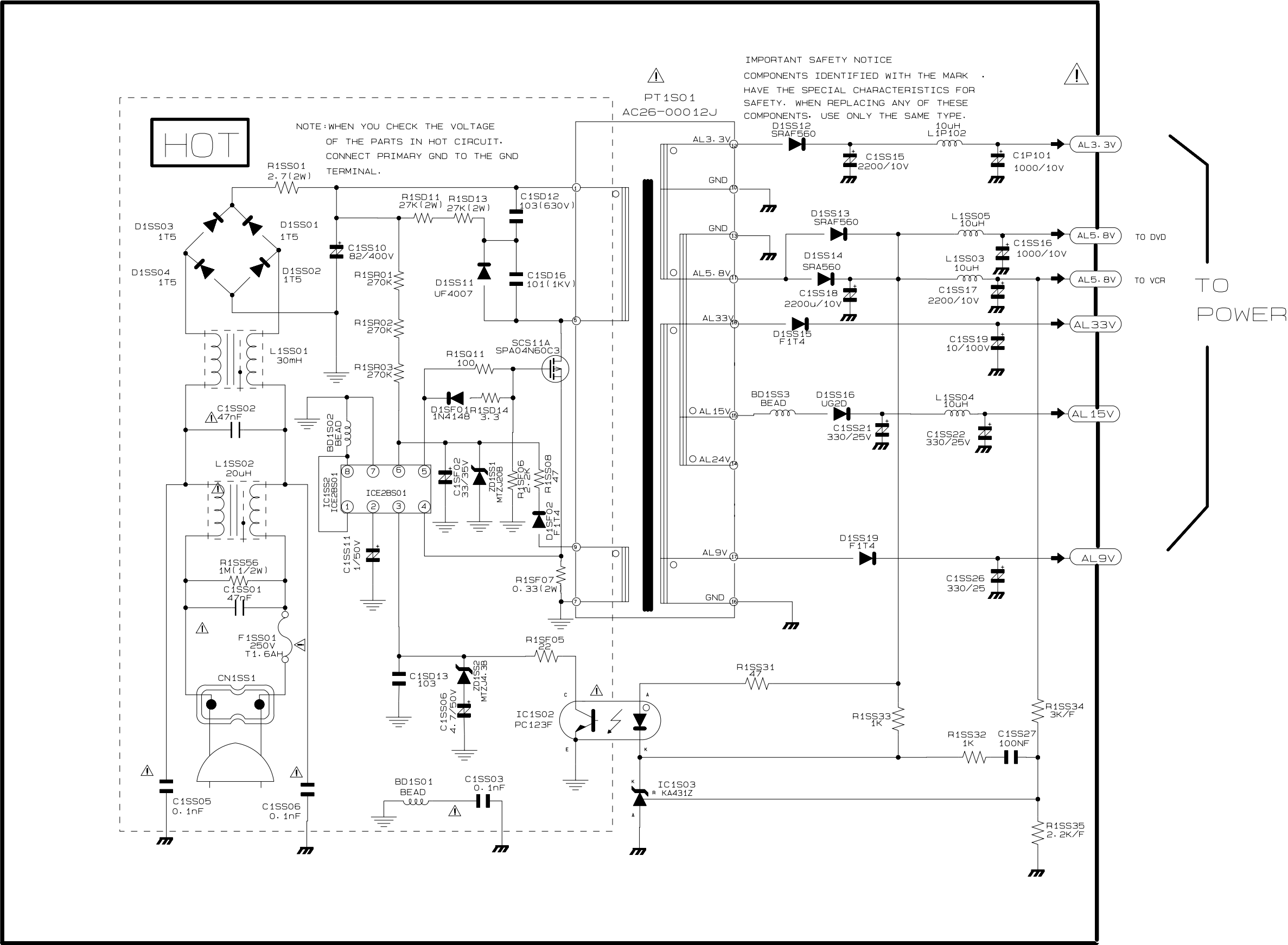
For schematic Diagram
- Resistors are in ohms, 1/8W unless otherwise noted.

Special note :
Most semiconductor devices are electrostatically sensitive and therefore require the special handling techniques described under the "electrostatically sensitive (ES) devices" section of this service manual.

Note :
Do not use the part number shown on this drawing for ordering. The correct part number is shown in the parts list (may be slightly different or amended since this drawing was prepared).

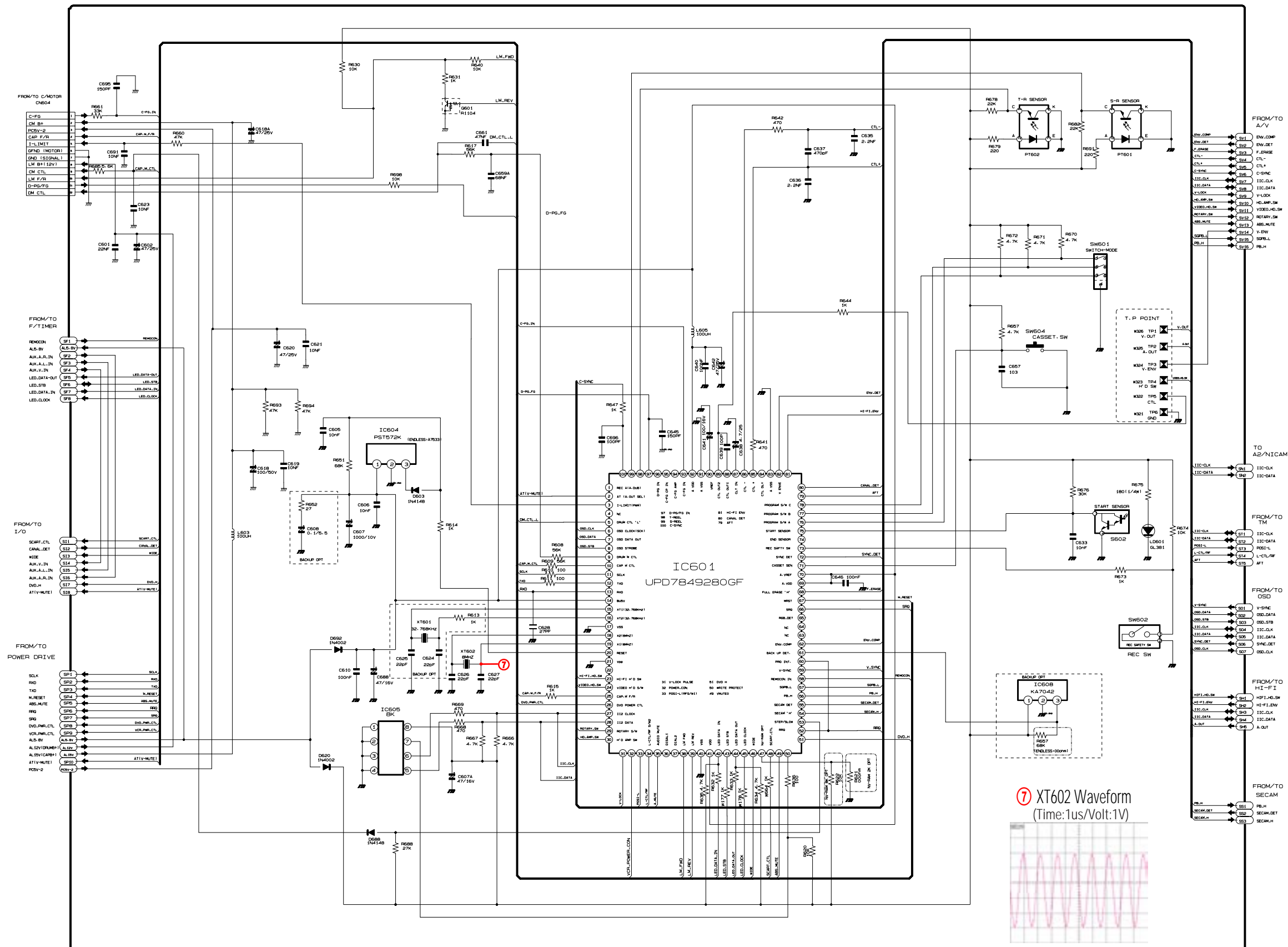
Important safety notices :
Components identified with the mark ⚠ have the special characteristics for safety. When replacing any of these components. Use only the same type.

11-1 S.M.P.S.





11-3 Syscon/Servo

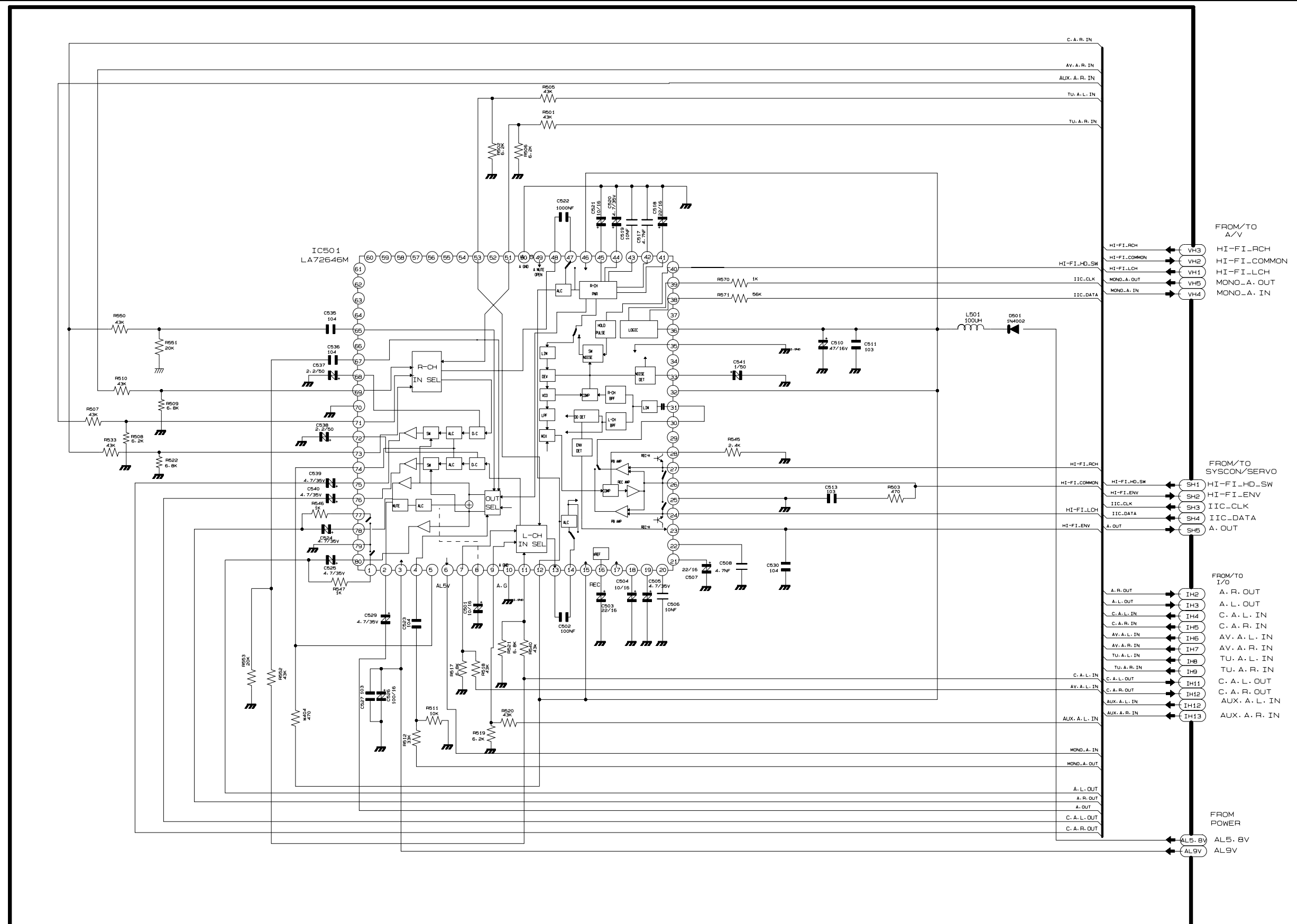


* These are the waveforms of DVD-V5500/ DVD-V6500.
Caution) There can be some differences (Voltage, Frequency, etc.) among cameras.

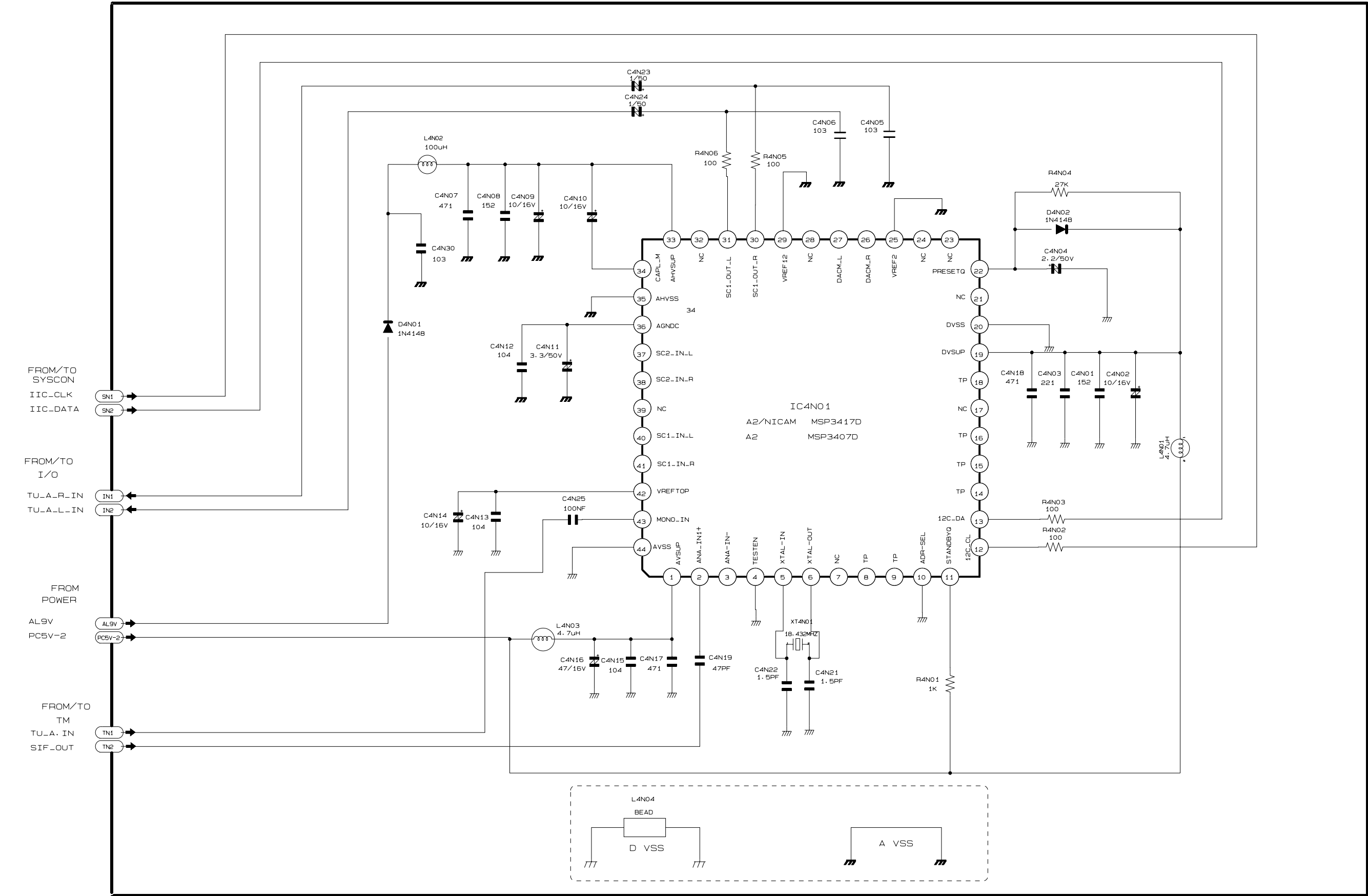




11-6 Hi-Fi

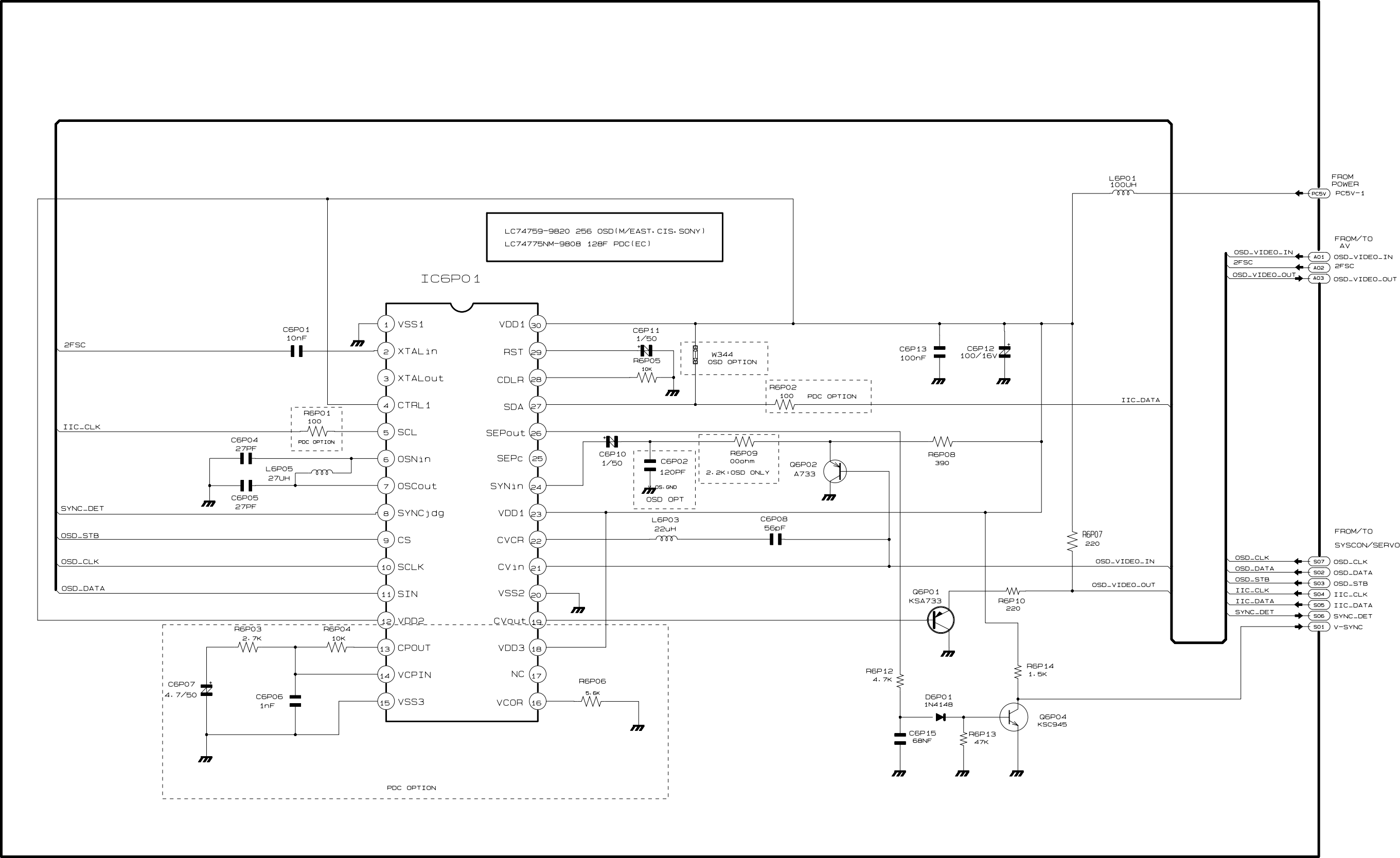


11-7 A2/NICAM

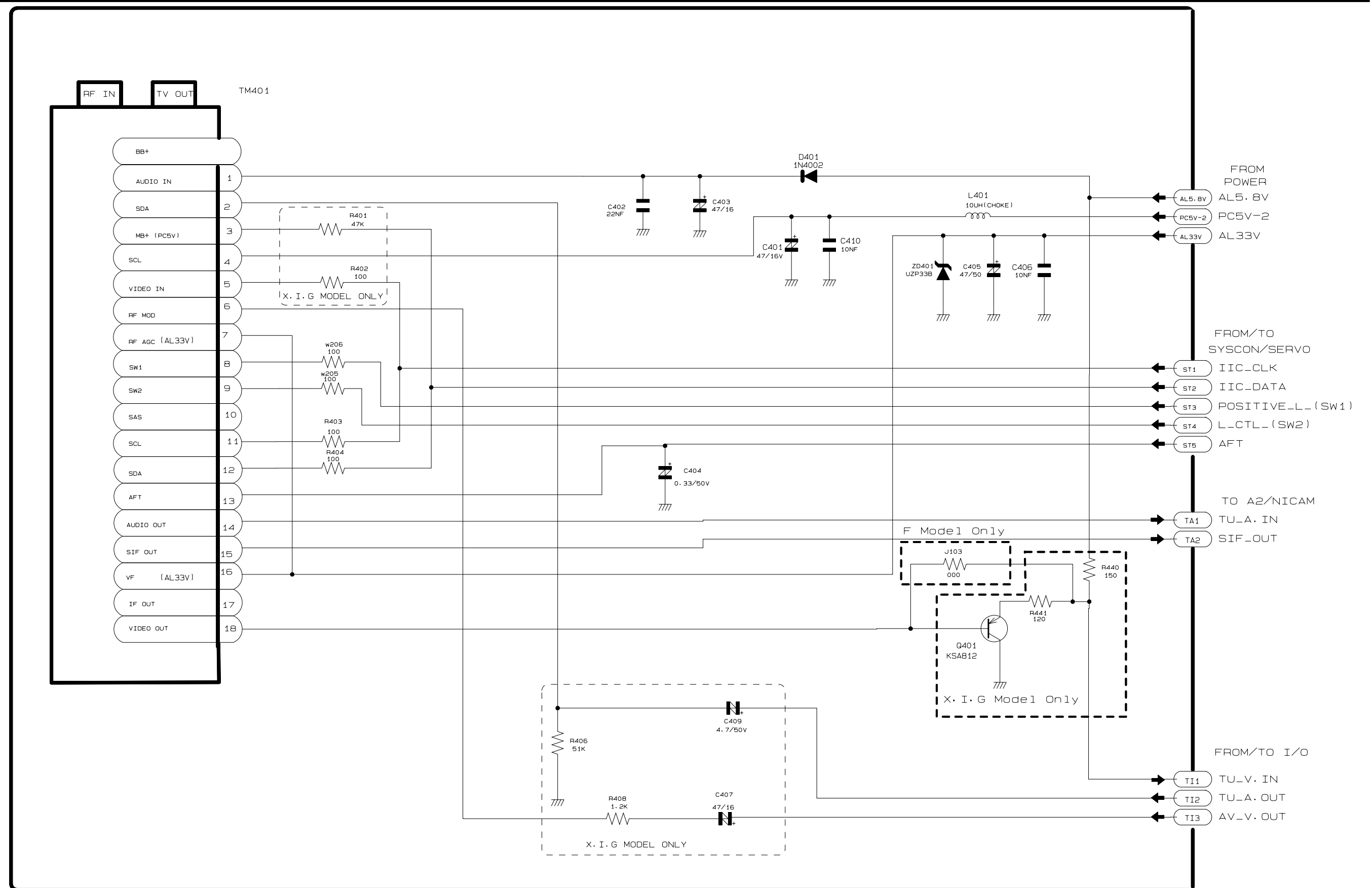




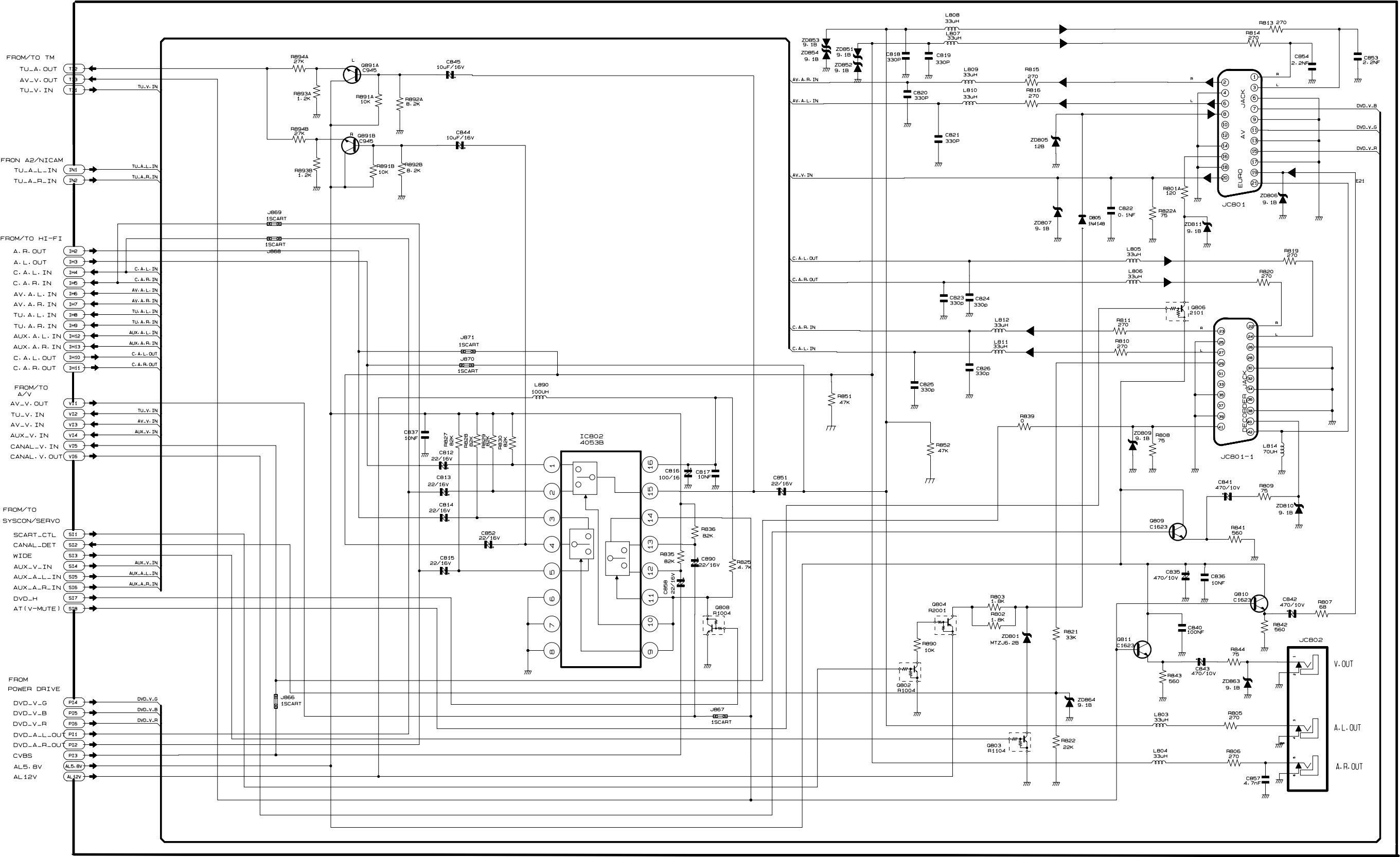
11-9 OSD/VPS/PDC



11-10 TM

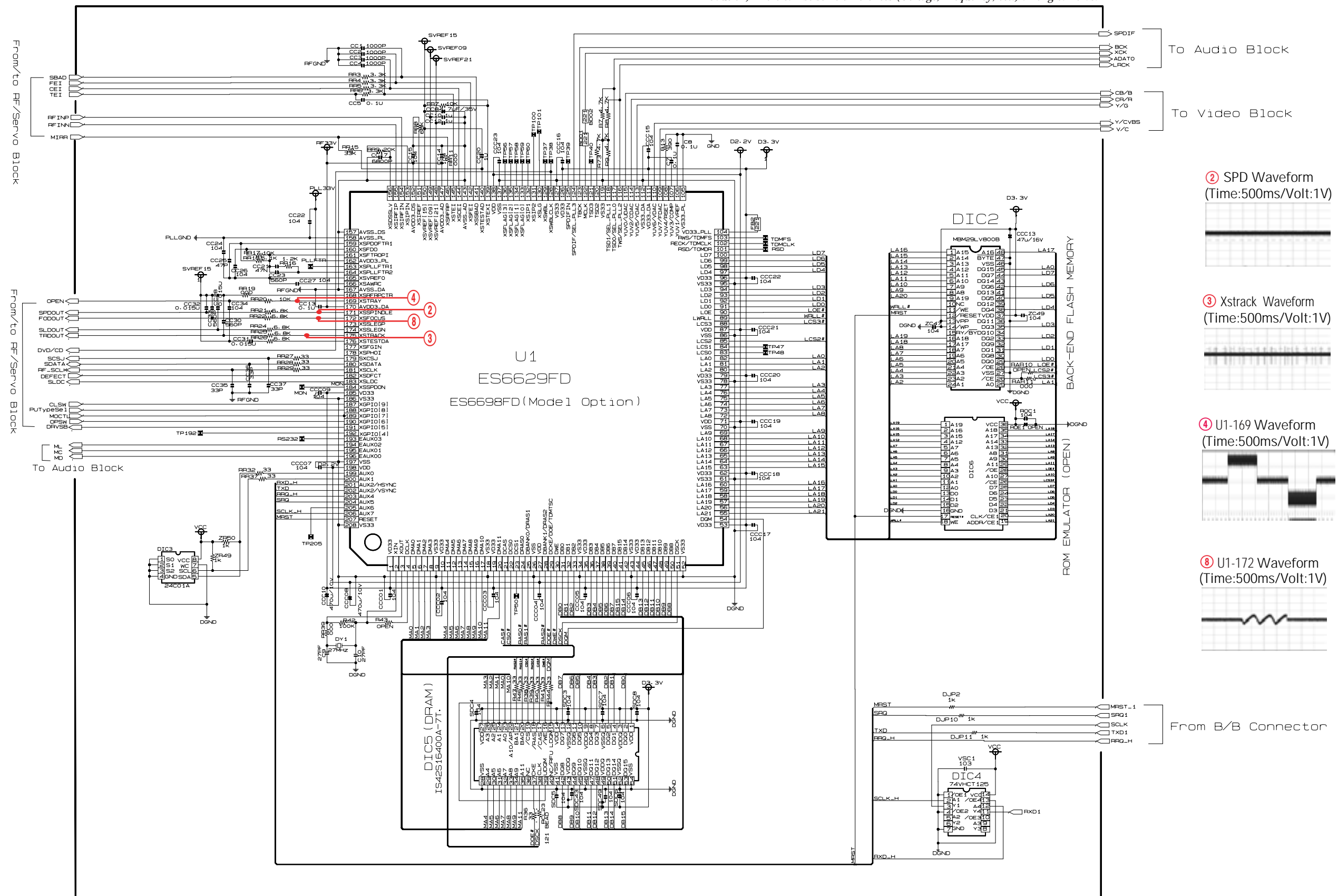


11-11 I/O

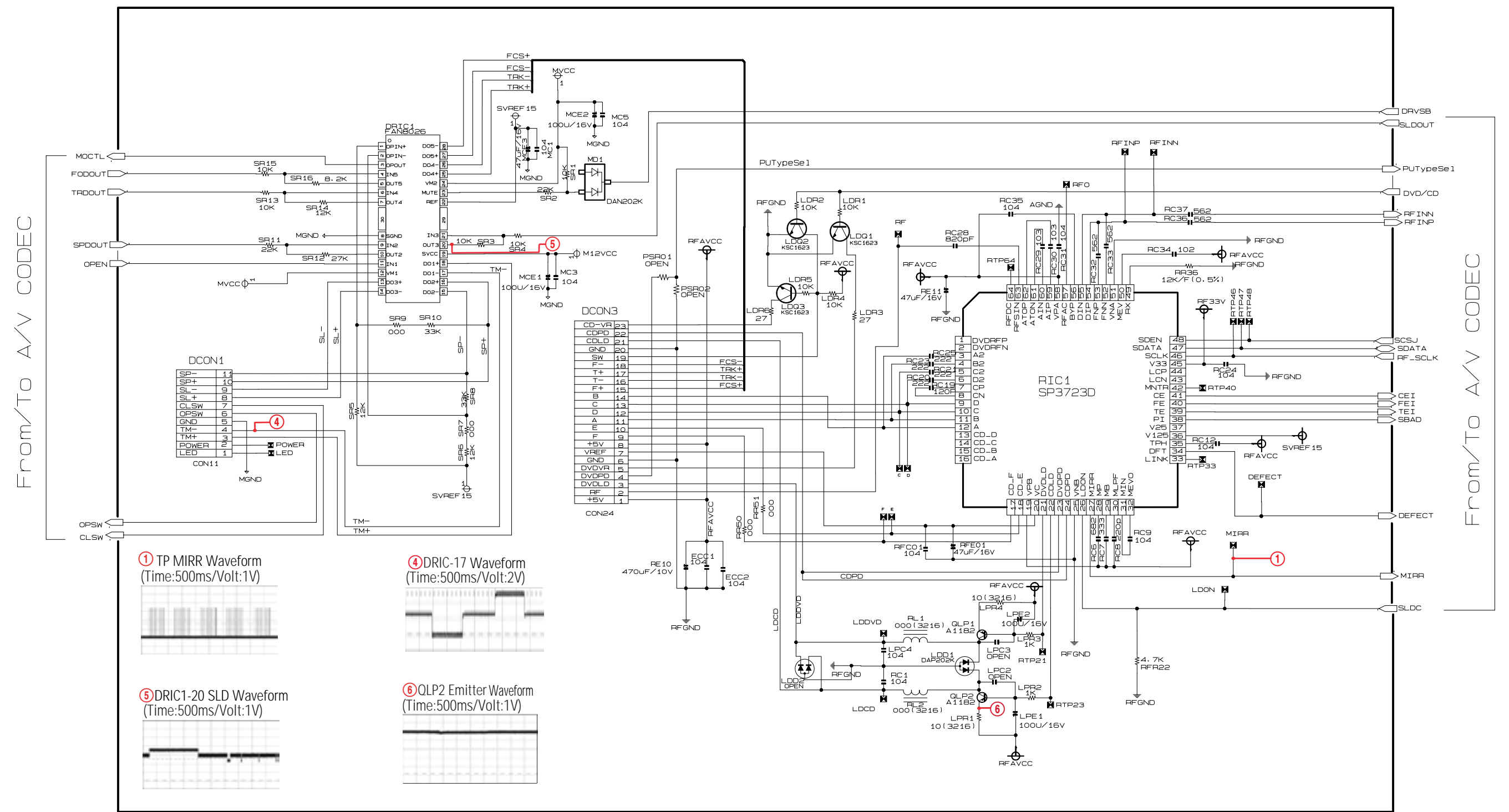


11-12 DVD A/V Codec and Memory Interface

※ These are the waveforms of DVD-V5450/V5350/V5500/V6400/V6450/V6500.
Caution) There can be some differences (Voltage, Frequency, etc.) among cameras.

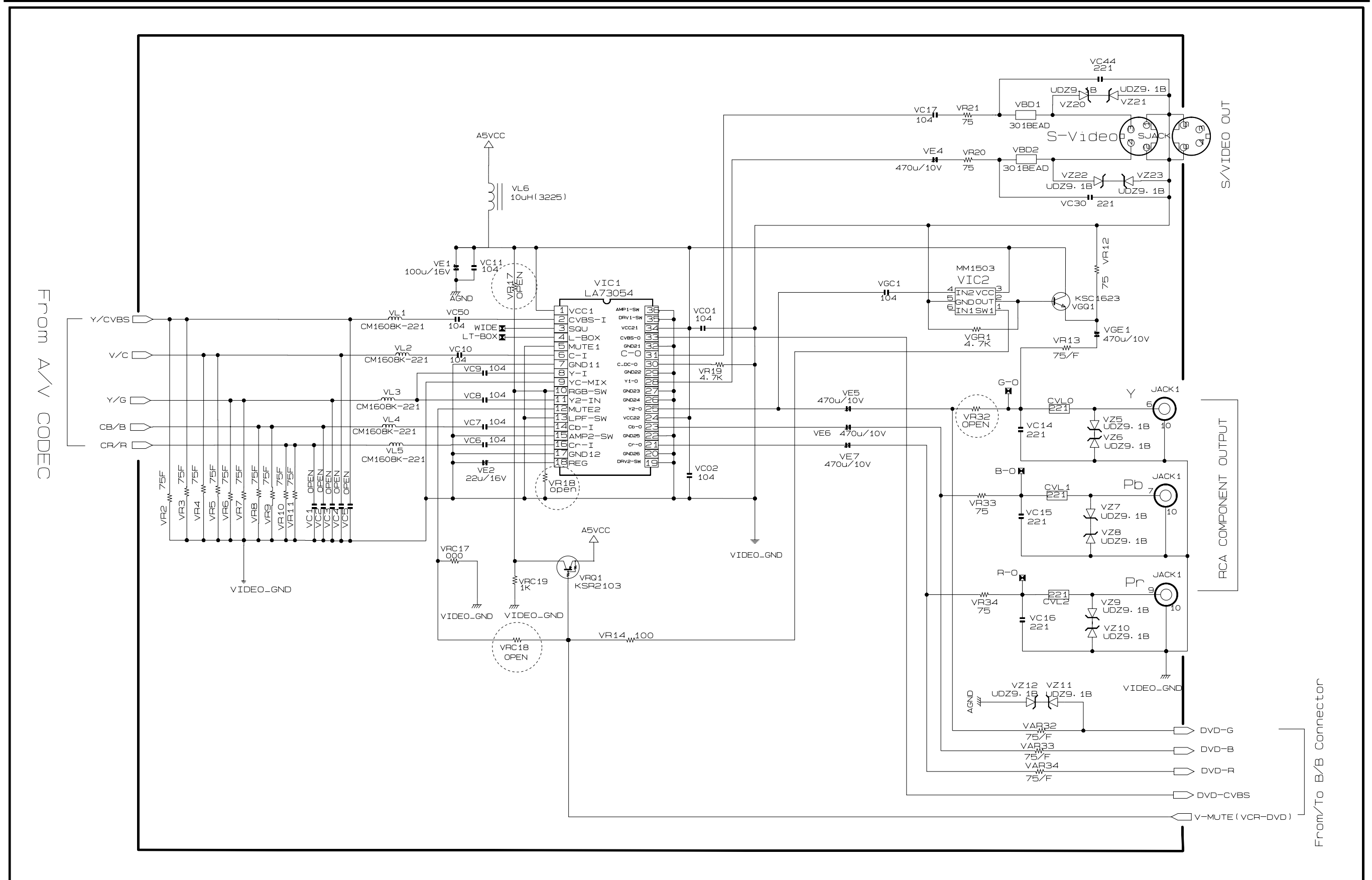


11-13 DVD RF and Servo

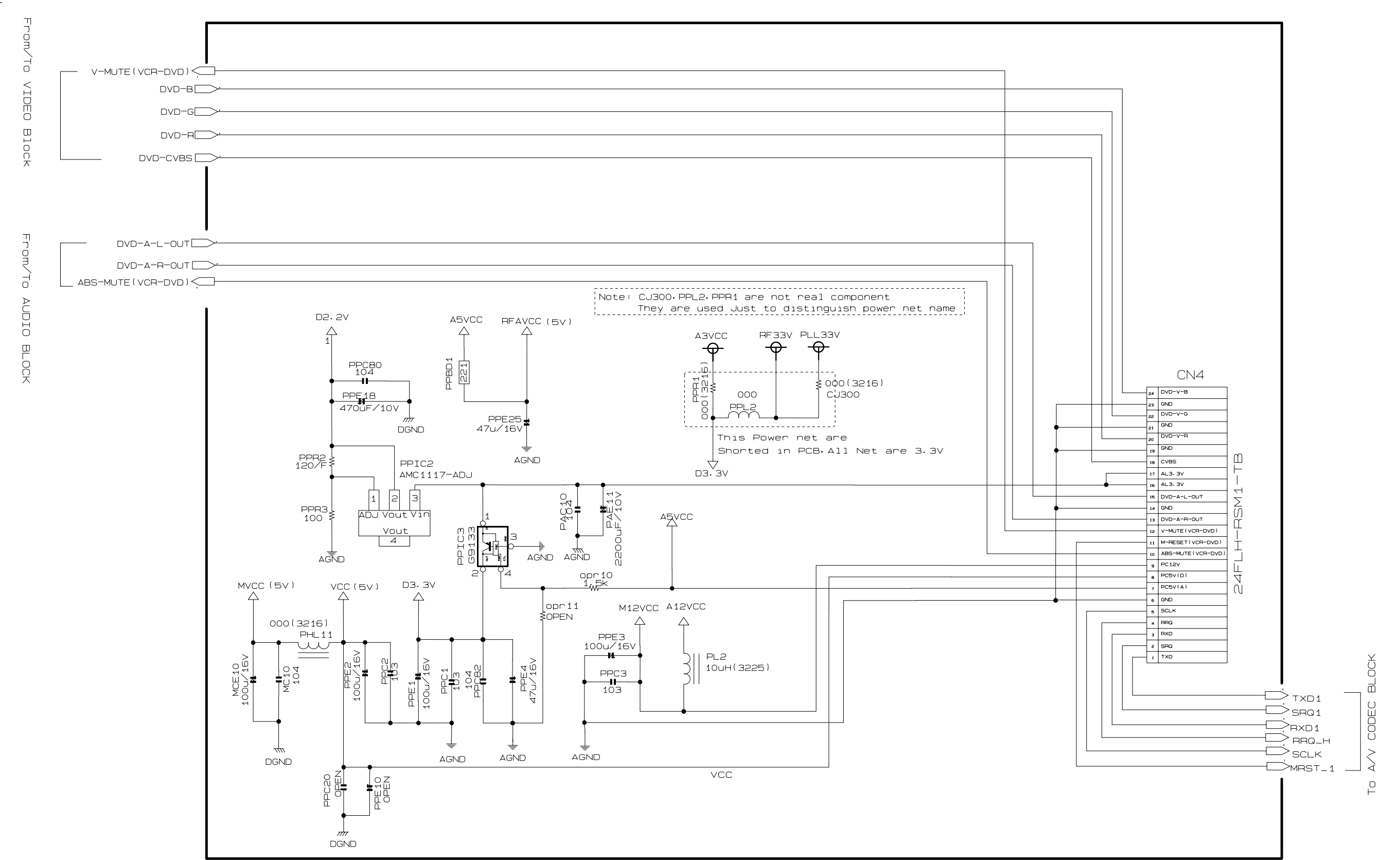


※ These are the waveforms of DVD-V5450/V5350/V5500/V6400/V6450/V6500.
Caution) There can be some differences (Voltage, Frequency, etc.) among cameras.

11-14 DVD Video Output



11-15 B/B Connector and Power Connection



IMPORTANT SERVICE GUIDE

◆ MODE SWITCH (PROGRAM SWITCH) ASSEMBLY POINT

1) When installing the ass'y deck on the Main PCB, be sure to align the assembly point of mode switch.

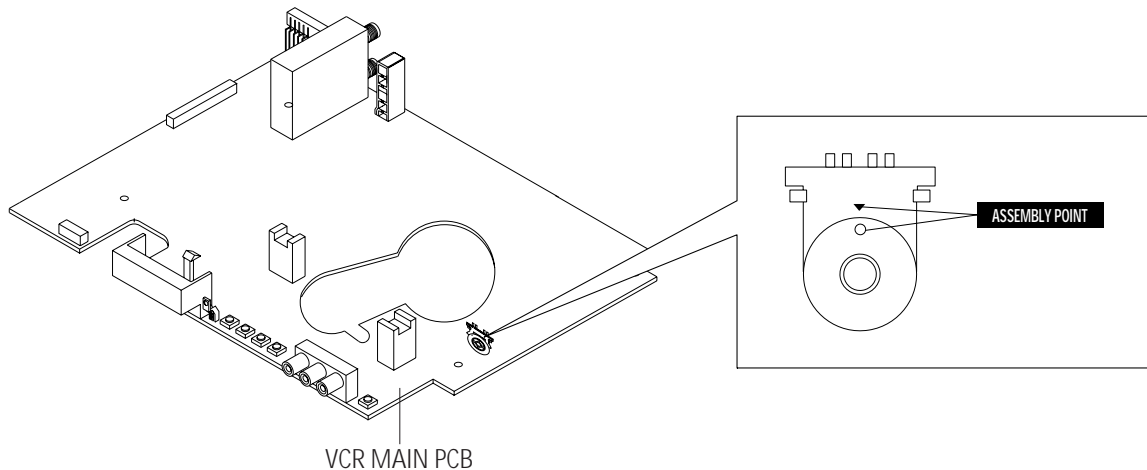


Fig. 1

◆ HOW TO EJECT THE CASSETTE TAPE (If the tape is stuck in the unit)

- 1) Turn the Gear Worm ❶ clockwise in the direction of arrow with a screwdriver. (See Fig. 2)
(Other method ; Remove the screw of Motor Load Ass'y, Separate the Motor Load Ass'y)
- 2) When Slider S, T approaches the unloading position, rotate holder Clutch counterclockwise after inserting screwdriver in the frame's bottom hole in order to wind the unwound tape. (Refer to Fig. 3)
(If you rotate Gear Worm ❶ continuously when tape is unwinding, you may cause tape contamination by grease and tape damage. Be sure to wind the unwound tape with the unit in the horizontal position.)
- 3) Rotate Gear Worm ❶ clockwise using a screwdriver until the mecha is in the eject state. Remove the tape. (Refer to Fig. 2)

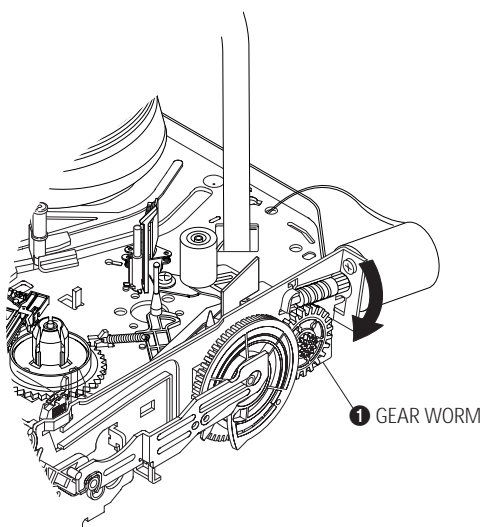


Fig. 2

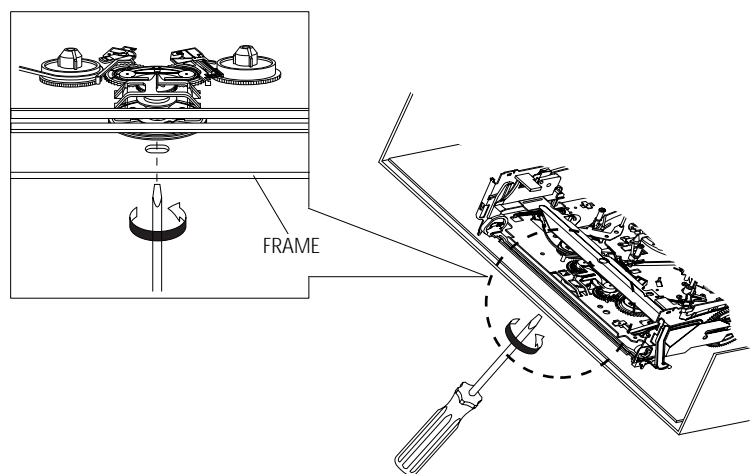


Fig. 3